



Miller[®]

OM-193 471P

2006-05

Processes



MIG (GMAW) Welding

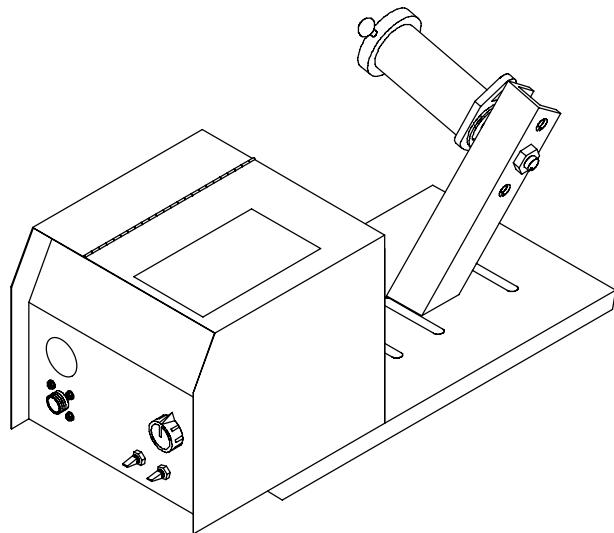
Flux Cored (FCAW) Welding

Description



Wire Feeder

R-115



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OWNER'S MANUAL

File: MIG (GMAW)

From Miller to You

Thank you and congratulations on choosing Miller. Now you can get the job done and get it done right. We know you don't have time to do it any other way.

That's why when Niels Miller first started building arc welders in 1929, he made sure his products offered long-lasting value and superior quality. Like you, his customers couldn't afford anything less. Miller products had to be more than the best they could be. They had to be the best you could buy.

Today, the people that build and sell Miller products continue the tradition. They're just as committed to providing equipment and service that meets the high standards of quality and value established in 1929.

This Owner's Manual is designed to help you get the most out of your Miller products. Please take time to read the Safety precautions. They will help you protect yourself against potential hazards on the worksite.

We've made installation and operation quick and easy. With Miller you can count on years of reliable service with proper maintenance. And if for some reason the unit needs repair, there's a Troubleshooting section that will help you figure out what the problem is. The parts list will then help you to decide the exact part you may need to fix the problem. Warranty and service information for your particular model are also provided.



Miller is the first welding equipment manufacturer in the U.S.A. to be registered to the ISO 9001:2000 Quality System Standard.



Miller Electric manufactures a full line of welders and welding related equipment. For information on other quality Miller products, contact your local Miller distributor to receive the latest full line catalog or individual specification sheets. **To locate your nearest distributor or service agency call 1-800-4-A-Miller, or visit us at www.MillerWelds.com on the web.**



Working as hard as you do – every power source from Miller is backed by the most hassle-free warranty in the business.



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SECTION 1 – SAFETY PRECAUTIONS - READ BEFORE USING

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▲ Warning: Protect yourself and others from injury — read and follow these precautions.

1-1. Symbol Usage



Means Warning! Watch Out! There are possible hazards with this procedure! The possible hazards are shown in the adjoining symbols.



▲ Marks a special safety message.

□ Means "Note"; not safety related.

This group of symbols means Warning! Watch Out! possible ELECTRIC SHOCK, MOVING PARTS, and HOT PARTS hazards. Consult symbols and related instructions below for necessary actions to avoid the hazards.

1-2. Arc Welding Hazards

▲ The symbols shown below are used throughout this manual to call attention to and identify possible hazards. When you see the symbol, watch out, and follow the related instructions to avoid the hazard. The safety information given below is only a summary of the more complete safety information found in the Safety Standards listed in Section 1-5. Read and follow all Safety Standards.

▲ Only qualified persons should install, operate, maintain, and repair this unit.

▲ During operation, keep everybody, especially children, away.



ELECTRIC SHOCK can kill.

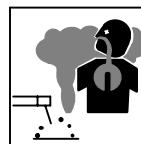
Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuit is electrically live whenever the output is on. The input power circuit and machine internal circuits are also live when power is on. In semiautomatic or automatic wire welding, the wire, wire reel, drive roll housing, and all metal parts touching the welding wire are electrically live. Incorrectly installed or improperly grounded equipment is a hazard.

- Do not touch live electrical parts.
- Wear dry, hole-free insulating gloves and body protection.
- Insulate yourself from work and ground using dry insulating mats or covers big enough to prevent any physical contact with the work or ground.
- Do not use AC output in damp areas, if movement is confined, or if there is a danger of falling.
- Use AC output ONLY if required for the welding process.
- If AC output is required, use remote output control if present on unit.
- Additional safety precautions are required when any of the following electrically hazardous conditions are present: in damp locations or while wearing wet clothing; on metal structures such as floors, gratings, or scaffolds; when in cramped positions such as sitting, kneeling, or lying; or when there is a high risk of unavoidable or accidental contact with the workpiece or ground. For these conditions, use the following equipment in order presented: 1) a semiautomatic DC constant voltage (wire) welder, 2) a DC manual (stick) welder, or 3) an AC welder with reduced open-circuit voltage. In most situations, use of a DC, constant voltage wire welder is recommended. And, do not work alone!
- Disconnect input power or stop engine before installing or servicing this equipment. Lockout/tagout input power according to OSHA 29 CFR 1910.147 (see Safety Standards).
- Properly install and ground this equipment according to its Owner's Manual and national, state, and local codes.
- Always verify the supply ground – check and be sure that input power cord ground wire is properly connected to ground terminal in disconnect box or that cord plug is connected to a properly grounded receptacle outlet.
- When making input connections, attach proper grounding conductor first – double-check connections.
- Frequently inspect input power cord for damage or bare wiring – replace cord immediately if damaged – bare wiring can kill.

- Turn off all equipment when not in use.
- Do not use worn, damaged, undersized, or poorly spliced cables.
- Do not drape cables over your body.
- If earth grounding of the workpiece is required, ground it directly with a separate cable.
- Do not touch electrode if you are in contact with the work, ground, or another electrode from a different machine.
- Do not touch electrode holders connected to two welding machines at the same time since double open-circuit voltage will be present.
- Use only well-maintained equipment. Repair or replace damaged parts at once. Maintain unit according to manual.
- Wear a safety harness if working above floor level.
- Keep all panels and covers securely in place.
- Clamp work cable with good metal-to-metal contact to workpiece or worktable as near the weld as practical.
- Insulate work clamp when not connected to workpiece to prevent contact with any metal object.
- Do not connect more than one electrode or work cable to any single weld output terminal.

SIGNIFICANT DC VOLTAGE exists in inverter-type welding power sources after removal of input power.

- Turn Off inverter, disconnect input power, and discharge input capacitors according to instructions in Maintenance Section before touching any parts.



FUMES AND GASES can be hazardous.

Welding produces fumes and gases. Breathing these fumes and gases can be hazardous to your health.

- Keep your head out of the fumes. Do not breathe the fumes.
- If inside, ventilate the area and/or use local forced ventilation at the arc to remove welding fumes and gases.
- If ventilation is poor, wear an approved air-supplied respirator.
- Read and understand the Material Safety Data Sheets (MSDSs) and the manufacturer's instructions for metals, consumables, coatings, cleaners, and degreasers.
- Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Always have a trained watchperson nearby. Welding fumes and gases can displace air and lower the oxygen level causing injury or death. Be sure the breathing air is safe.
- Do not weld in locations near degreasing, cleaning, or spraying operations. The heat and rays of the arc can react with vapors to form highly toxic and irritating gases.
- Do not weld on coated metals, such as galvanized, lead, or cadmium plated steel, unless the coating is removed from the weld area, the area is well ventilated, and while wearing an air-supplied respirator. The coatings and any metals containing these elements can give off toxic fumes if welded.



ARC RAYS can burn eyes and skin.

Arc rays from the welding process produce intense visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin. Sparks fly off from the weld.

- Wear an approved welding helmet fitted with a proper shade of filter lenses to protect your face and eyes when welding or watching (see ANSI Z49.1 and Z87.1 listed in Safety Standards).
- Wear approved safety glasses with side shields under your helmet.
- Use protective screens or barriers to protect others from flash, glare and sparks; warn others not to watch the arc.
- Wear protective clothing made from durable, flame-resistant material (leather, heavy cotton, or wool) and foot protection.



BUILDDUP OF GAS can injure or kill.

- Shut off shielding gas supply when not in use.
- Always ventilate confined spaces or use approved air-supplied respirator.



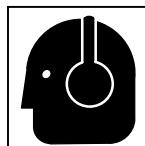
HOT PARTS can cause severe burns.

- Do not touch hot parts bare handed.
- Allow cooling period before working on gun or torch.
- To handle hot parts, use proper tools and/or wear heavy, insulated welding gloves and clothing to prevent burns.



MAGNETIC FIELDS can affect pacemakers.

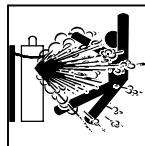
- Pacemaker wearers keep away.
- Wearers should consult their doctor before going near arc welding, gouging, or spot welding operations.



NOISE can damage hearing.

Noise from some processes or equipment can damage hearing.

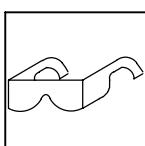
- Wear approved ear protection if noise level is high.



CYLINDERS can explode if damaged.

Shielding gas cylinders contain gas under high pressure. If damaged, a cylinder can explode. Since gas cylinders are normally part of the welding process, be sure to treat them carefully.

- Protect compressed gas cylinders from excessive heat, mechanical shocks, physical damage, slag, open flames, sparks, and arcs.
- Install cylinders in an upright position by securing to a stationary support or cylinder rack to prevent falling or tipping.
- Keep cylinders away from any welding or other electrical circuits.
- Never drape a welding torch over a gas cylinder.
- Never allow a welding electrode to touch any cylinder.
- Never weld on a pressurized cylinder – explosion will result.
- Use only correct shielding gas cylinders, regulators, hoses, and fittings designed for the specific application; maintain them and associated parts in good condition.
- Turn face away from valve outlet when opening cylinder valve.
- Keep protective cap in place over valve except when cylinder is in use or connected for use.
- Use the right equipment, correct procedures, and sufficient number of persons to lift and move cylinders.
- Read and follow instructions on compressed gas cylinders, associated equipment, and Compressed Gas Association (CGA) publication P-1 listed in Safety Standards.



FLYING METAL can injure eyes.

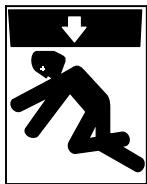
- Welding, chipping, wire brushing, and grinding cause sparks and flying metal. As welds cool, they can throw off slag.
- Wear approved safety glasses with side shields even under your welding helmet.

1-3. Additional Symbols For Installation, Operation, And Maintenance



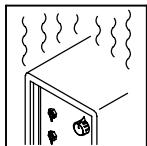
FIRE OR EXPLOSION hazard.

- Do not install or place unit on, over, or near combustible surfaces.
- Do not install unit near flammables.
- Do not overload building wiring – be sure power supply system is properly sized, rated, and protected to handle this unit.



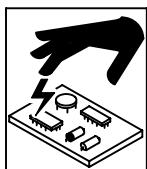
FALLING UNIT can cause injury.

- Use lifting eye to lift unit only, NOT running gear, gas cylinders, or any other accessories.
- Use equipment of adequate capacity to lift and support unit.
- If using lift forks to move unit, be sure forks are long enough to extend beyond opposite side of unit.



OVERUSE can cause OVERHEATING

- Allow cooling period; follow rated duty cycle.
- Reduce current or reduce duty cycle before starting to weld again.
- Do not block or filter airflow to unit.



STATIC (ESD) can damage PC boards.

- Put on grounded wrist strap BEFORE handling boards or parts.
- Use proper static-proof bags and boxes to store, move, or ship PC boards.



MOVING PARTS can cause injury.

- Keep away from moving parts.
- Keep away from pinch points such as drive rolls.



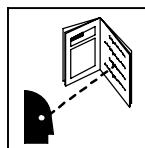
WELDING WIRE can cause injury.

- Do not press gun trigger until instructed to do so.
- Do not point gun toward any part of the body, other people, or any metal when threading welding wire.



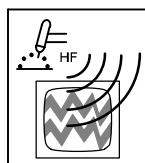
MOVING PARTS can cause injury.

- Keep away from moving parts such as fans.
- Keep all doors, panels, covers, and guards closed and securely in place.
- Have only qualified persons remove doors, panels, covers, or guards for maintenance as necessary.
- Reinstall doors, panels, covers, or guards when maintenance is finished and before re-connecting input power.



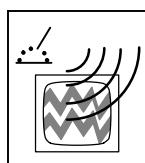
READ INSTRUCTIONS.

- Read Owner's Manual before using or servicing unit.
- Use only genuine Miller/Hobart replacement parts.



H.F. RADIATION can cause interference.

- High-frequency (H.F.) can interfere with radio navigation, safety services, computers, and communications equipment.
- Have only qualified persons familiar with electronic equipment perform this installation.
- The user is responsible for having a qualified electrician promptly correct any interference problem resulting from the installation.
- If notified by the FCC about interference, stop using the equipment at once.
- Have the installation regularly checked and maintained.
- Keep high-frequency source doors and panels tightly shut, keep spark gaps at correct setting, and use grounding and shielding to minimize the possibility of interference.



ARC WELDING can cause interference.

- Electromagnetic energy can interfere with sensitive electronic equipment such as computers and computer-driven equipment such as robots.
- Be sure all equipment in the welding area is electromagnetically compatible.
- To reduce possible interference, keep weld cables as short as possible, close together, and down low, such as on the floor.
- Locate welding operation 100 meters from any sensitive electronic equipment.
- Be sure this welding machine is installed and grounded according to this manual.
- If interference still occurs, the user must take extra measures such as moving the welding machine, using shielded cables, using line filters, or shielding the work area.

1-4. California Proposition 65 Warnings

- ▲ Welding or cutting equipment produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code Section 25249.5 et seq.)
- ▲ Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. Wash hands after handling.

For Gasoline Engines:

- ▲ Engine exhaust contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

For Diesel Engines:

- ▲ Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

1-5. Principal Safety Standards

Safety in Welding, Cutting, and Allied Processes, ANSI Standard Z49.1, from Global Engineering Documents (phone: 1-877-413-5184, website: www.global.ihs.com).

Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping, American Welding Society Standard AWS F4.1 from Global Engineering Documents (phone: 1-877-413-5184, website: www.global.ihs.com).

National Electrical Code, NFPA Standard 70, from National Fire Protection Association, P.O. Box 9101, 1 Battery March Park, Quincy, MA 02269-9101 (phone: 617-770-3000, website: www.nfpa.org).

Safe Handling of Compressed Gases in Cylinders, CGA Pamphlet P-1, from Compressed Gas Association, 1735 Jefferson Davis Highway, Suite 1004, Arlington, VA 22202-4102 (phone: 703-412-0900, website: www.cganet.com).

Code for Safety in Welding and Cutting, CSA Standard W117.2, from Canadian Standards Association, Standards Sales, 178 Rexdale

Boulevard, Rexdale, Ontario, Canada M9W 1R3 (phone: 800-463-6727 or in Toronto 416-747-4044, website: www.csa-international.org).

Practice For Occupational And Educational Eye And Face Protection, ANSI Standard Z87.1, from American National Standards Institute, 11 West 42nd Street, New York, NY 10036-8002 (phone: 212-642-4900, website: www.ansi.org).

Standard for Fire Prevention During Welding, Cutting, and Other Hot Work, NFPA Standard 51B, from National Fire Protection Association, P.O. Box 9101, 1 Battery March Park, Quincy, MA 02269-9101 (phone: 617-770-3000, website: www.nfpa.org).

OSHA, Occupational Safety and Health Standards for General Industry, Title 29, Code of Federal Regulations (CFR), Part 1910, Subpart Q, and Part 1926, Subpart J, from U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250 (there are 10 Regional Offices—phone for Region 5, Chicago, is 312-353-2220, website: www.osha.gov).

1-6. EMF Information

Considerations About Welding And The Effects Of Low Frequency Electric And Magnetic Fields

Welding current, as it flows through welding cables, will cause electromagnetic fields. There has been and still is some concern about such fields. However, after examining more than 500 studies spanning 17 years of research, a special blue ribbon committee of the National Research Council concluded that: "The body of evidence, in the committee's judgment, has not demonstrated that exposure to power-frequency electric and magnetic fields is a human-health hazard." However, studies are still going forth and evidence continues to be examined. Until the final conclusions of the research are reached, you may wish to minimize your exposure to electromagnetic fields when welding or cutting.

To reduce magnetic fields in the workplace, use the following procedures:

1. Keep cables close together by twisting or taping them.
2. Arrange cables to one side and away from the operator.
3. Do not coil or drape cables around your body.
4. Keep welding power source and cables as far away from operator as practical.
5. Connect work clamp to workpiece as close to the weld as possible.

About Pacemakers:

Pacemaker wearers consult your doctor before welding or going near welding operations. If cleared by your doctor, then following the above procedures is recommended.

SECTION 2 – CONSIGNES DE SÉCURITÉ – LIRE AVANT UTILISATION

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▲ Avertissement : se protéger et protéger les autres contre le risque de blessure — lire et respecter ces consignes.

2-1. Symboles utilisés



Symbol graphique d'avertissement ! Attention ! Cette procédure comporte des risques possibles ! Les dangers éventuels sont représentés par les symboles graphiques joints.



▲ Indique un message de sécurité particulier

☞ Signifie NOTE ; n'est pas relatif à la sécurité.

2-2. Dangers relatifs au soudage à l'arc

- ▲ Les symboles représentés ci-dessous sont utilisés dans ce manuel pour attirer l'attention et identifier les dangers possibles. En présence de l'un de ces symboles, prendre garde et suivre les instructions afférentes pour éviter tout risque. Les instructions en matière de sécurité indiquées ci-dessous ne constituent qu'un sommaire des instructions de sécurité plus complètes fournies dans les normes de sécurité énumérées dans la Section 2-5. Lire et observer toutes les normes de sécurité.
- ▲ Seul un personnel qualifié est autorisé à installer, faire fonctionner, entretenir et réparer cet appareil.
- ▲ Pendant le fonctionnement, maintenir à distance toutes les personnes, notamment les enfants de l'appareil.



UNE DÉCHARGE ÉLECTRIQUE peut entraîner la mort.

Le contact d'organes électriques sous tension peut provoquer des accidents mortels ou des brûlures graves. Le circuit de l'électrode et de la pièce est sous tension lorsque le courant est délivré à la sortie. Le circuit d'alimentation et les circuits internes de la machine sont également sous tension lorsque l'alimentation est sur Marche. Dans le mode de soudage avec du fil, le fil, le dérouleur, le bloc de commande du rouleau et toutes les parties métalliques en contact avec le fil sont sous tension électrique. Un équipement installé ou mis à la terre de manière incorrecte ou impropre constitue un danger.

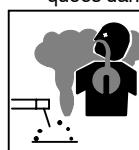
- Ne pas toucher aux pièces électriques sous tension.
- Porter des gants isolants et des vêtements de protection secs et sans trous.
- S'isoler de la pièce à couper et du sol en utilisant des housses ou des tapis assez grands afin d'éviter tout contact physique avec la pièce à couper ou le sol.
- Ne pas se servir de source électrique à courant électrique dans les zones humides, dans les endroits confinés ou là où on risque de tomber.
- Se servir d'une source électrique à courant électrique UNIQUEMENT si le procédé de soudage le demande.
- Si l'utilisation d'une source électrique à courant électrique s'avère nécessaire, se servir de la fonction de télécommande si l'appareil en est équipé.
- D'autres consignes de sécurité sont nécessaires dans les conditions suivantes : risques électriques dans un environnement humide ou si l'on porte des vêtements mouillés ; sur des structures métalliques telles que sols, grilles ou échafaudages ; en position coincée comme assise, à genoux ou couchée ; ou s'il y a un risque élevé de contact inévitable ou accidentel avec la pièce à souder ou le sol. Dans ces conditions, utiliser les équipements suivants, dans l'ordre indiqué : 1) un poste à souder DC à tension constante (à fil), 2) un poste à souder DC manuel (électrode) ou 3) un poste à souder AC à tension à vide réduite. Dans la plupart des situations, l'utilisation d'un poste à souder DC à fil à tension constante est recommandée. En outre, ne pas travailler seul !
- Couper l'alimentation ou arrêter le moteur avant de procéder à l'installation, à la réparation ou à l'entretien de l'appareil. Déverrouiller l'alimentation selon la norme OSHA 29 CFR 1910.147 (voir normes de sécurité).
- Installer le poste correctement et le mettre à la terre convenablement selon les consignes du manuel de l'opérateur et les normes nationales, provinciales et locales.
- Toujours vérifier la terre du cordon d'alimentation. Vérifier et s'assurer que le fil de terre du cordon d'alimentation est bien raccordé à la borne de terre du sectionneur ou que la fiche du cordon est raccordée à une prise correctement mise à la terre.
- En effectuant les raccordements d'entrée, fixer d'abord le conducteur de mise à la terre approprié et contre-vérifier les connexions.

Ce groupe de symboles signifie Avertissement ! Attention ! Risques d'ELECTROCUTION, ORGANES MOBILES et PARTIES CHAUDES. Consulter les symboles et les instructions afférentes ci-dessous concernant les mesures à prendre pour supprimer les dangers.

- Vérifier fréquemment le cordon d'alimentation afin de s'assurer qu'il n'est pas altéré ou à nu, le remplacer immédiatement s'il l'est. Un fil à nu peut entraîner la mort.
- L'équipement doit être hors tension lorsqu'il n'est pas utilisé.
- Ne pas utiliser des câbles usés, endommagés, de grosseur insuffisante ou mal épissés.
- Ne pas enrouler les câbles autour du corps.
- Si la pièce soudée doit être mise à la terre, le faire directement avec un câble distinct.
- Ne pas toucher l'électrode quand on est en contact avec la pièce, la terre ou une électrode provenant d'une autre machine.
- Ne pas toucher des porte électrodes connectés à deux machines en même temps à cause de la présence d'une tension à vide doublée.
- N'utiliser qu'un matériel en bon état. Réparer ou remplacer sur-le-champ les pièces endommagées. Entretenir l'appareil conformément à ce manuel.
- Porter un harnais de sécurité si l'on doit travailler au-dessus du sol.
- S'assurer que tous les panneaux et couvercles sont correctement en place.
- Fixer le câble de retour de façon à obtenir un bon contact métal-métal avec la pièce à souder ou la table de travail, le plus près possible de la soudure.
- Isoler la pince de masse quand pas mis à la pièce pour éviter le contact avec tout objet métallique.
- Ne pas raccorder plus d'une électrode ou plus d'un câble de masse à une même borne de sortie de soudage.

Il reste une TENSION DC NON NÉGLIGEABLE dans les sources de soudage onduleur quand on a coupé l'alimentation.

- Arrêter les convertisseurs, débrancher le courant électrique et décharger les condensateurs d'alimentation selon les instructions indiquées dans la partie Entretien avant de toucher les pièces.



LES FUMÉES ET LES GAZ peuvent être dangereux.

Le soudage génère des fumées et des gaz. Leur inhalation peut être dangereuse pour la santé.

- Ne pas mettre sa tête au-dessus des vapeurs. Ne pas respirer ces vapeurs.
- À l'intérieur, ventiler la zone et/ou utiliser une ventilation forcée au niveau de l'arc pour l'évacuation des fumées et des gaz de soudage.
- Si la ventilation est médiocre, porter un respirateur anti-vapeurs approuvé.
- Lire et comprendre les spécifications de sécurité des matériaux (MSDS) et les instructions du fabricant concernant les métaux, les consommables, les revêtements, les nettoyants et les dégrasseurs.
- Travailler dans un espace fermé seulement s'il est bien ventilé ou en portant un respirateur à alimentation d'air. Demander toujours à un surveillant dûment formé de se tenir à proximité. Des fumées et des gaz de soudage peuvent déplacer l'air et abaisser le niveau d'oxygène provoquant des blessures ou des accidents mortels. S'assurer que l'air de respiration ne présente aucun danger.
- Ne pas souder dans des endroits situés à proximité d'opérations de dégraissage, de nettoyage ou de pulvérisation. La chaleur et les rayons de l'arc peuvent réagir en présence de vapeurs et former des gaz hautement toxiques et irritants.
- Ne pas souder des métaux munis d'un revêtement, tels que l'acier galvanisé, plaqué en plomb ou au cadmium à moins que le revêtement n'ait été enlevé dans la zone de soudure, que l'endroit soit bien ventilé et en portant un respirateur à alimentation d'air. Les revêtements et tous les métaux renfermant ces éléments peuvent dégager des fumées toxiques en cas de soudage.



LES RAYONS D'ARC peuvent entraîner des brûlures aux yeux et à la peau.

Le rayonnement de l'arc du procédé de soudage génère des rayons visibles et invisibles intenses (ultraviolets et infrarouges) susceptibles de provoquer des brûlures dans les yeux et sur la peau.

Des étincelles sont projetées pendant le soudage.

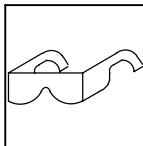
- Porter un casque de soudage approuvé muni de verres filtrants appropriés pour protéger visage et yeux pendant le soudage (voir ANSI Z49.1 et Z87.1 énumérés dans les normes de sécurité).
- Porter des lunettes de sécurité avec écrans latéraux même sous votre casque.
- Avoir recours à des écrans protecteurs ou à des rideaux pour protéger les autres contre les rayonnements les éblouissements et les étincelles ; prévenir toute personne sur les lieux de ne pas regarder l'arc.
- Porter des vêtements confectionnés avec des matières résistantes et ignifugées (cuir, coton lourd ou laine) et des bottes de protection.



LE SOUDAGE peut provoquer un incendie ou une explosion.

Le soudage effectué sur des contenants fermés tels que des réservoirs, tambours ou des conduites peut provoquer leur éclatement. Des étincelles peuvent être projetées de l'arc de soudure. La projection d'étincelles, des pièces chaudes et des équipements chauds peuvent provoquer des incendies et des brûlures. Le contact accidentel de l'électrode avec des objets métalliques peut provoquer des étincelles, une explosion, une surchauffe ou un incendie. Avant de commencer le soudage, vérifier et s'assurer que l'endroit ne présente pas de danger.

- Déplacer toutes les substances inflammables à une distance de 10,7 m de l'arc de soudage. En cas d'impossibilité, les recouvrir soigneusement avec des protections homologuées.
- Ne pas souder dans un endroit où des étincelles peuvent tomber sur des substances inflammables.
- Se protéger, ainsi que toute autre personne travaillant sur les lieux, contre les étincelles et le métal chaud.
- Des étincelles et des matériaux chauds du soudage peuvent facilement passer dans d'autres zones en traversant de petites fissures et des ouvertures.
- Afin d'éliminer tout risque de feu, être vigilant et garder toujours un extincteur à la portée de main.
- Le soudage effectué sur un plafond, plancher, paroi ou séparation peut déclencher un incendie de l'autre côté.
- Ne pas effectuer le soudage sur des contenants fermés tels que des réservoirs, tambours, ou conduites, à moins qu'ils n'aient été préparés correctement conformément à AWS F4.1 (voir les normes de sécurité).
- Brancher le câble de masse sur la pièce le plus près possible de la zone de soudage pour éviter le transport du courant sur une longue distance par des chemins inconnus éventuels en provoquant des risques d'électrocution, d'étincelles et d'incendie.
- Ne pas utiliser le poste de soudage pour dégeler des conduites gelées.
- En cas de non-utilisation, enlever la baguette d'électrode du porte-électrode ou couper le fil à la pointe de contact.
- Porter des vêtements de protection exempts d'huile tels que des gants en cuir, une veste résistante, des pantalons sans revers, des bottes et un casque.
- Avant de souder, retirer toute substance combustible de ses poches telles qu'un allumeur au butane ou des allumettes.
- Suivre les consignes de OSHA 1910.252 (a) (2) (iv) et de NFPA 51B pour travaux de soudage et prévoir un détecteur d'incendie et un extincteur à proximité.



DES PARTICULES VOLANTES peuvent blesser les yeux.

- Le soudage, l'écaillage, le passage de la pièce à la brosse en fil de fer, et le meulage génèrent des étincelles et des particules métalliques volantes. Pendant la période de refroidissement des soudures, elles risquent de projeter du laitier.
- Porter des lunettes de sécurité avec écrans latéraux ou un écran facial.



LES ACCUMULATIONS DE GAZ risquent de provoquer des blessures ou même la mort.

- Fermer l'alimentation du gaz protecteur en cas de non-utilisation.
- Veiller toujours à bien aérer les espaces confinés ou se servir d'un respirateur d'adduction d'air homologué.



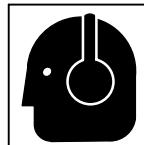
DES PIÈCES CHAUDES peuvent provoquer des brûlures graves.

- Ne pas toucher des parties chaudes à mains nues.
- Prévoir une période de refroidissement avant d'utiliser le pistolet ou la torche.
- Ne pas toucher aux pièces chaudes, utiliser les outils recommandés et porter des gants de soudage et des vêtements épais pour éviter les brûlures.



LES CHAMPS MAGNÉTIQUES peuvent affecter les stimulateurs cardiaques.

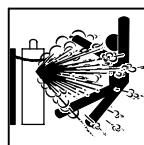
- Porteurs de stimulateur cardiaque, rester à distance.
- Les porteurs d'un stimulateur cardiaque doivent d'abord consulter leur médecin avant de s'approcher des opérations de soudage à l'arc, de gougeage ou de soudage par points.



LE BRUIT peut endommager l'ouïe.

Le bruit des processus et des équipements peut affecter l'ouïe.

- Porter des protections approuvées pour les oreilles si le niveau sonore est trop élevé.



LES BOUTEILLES peuvent exploser si elles sont endommagées.

Des bouteilles de gaz protecteur contiennent du gaz sous haute pression. Si une bouteille est endommagée, elle peut exploser. Du fait que les bouteilles de gaz font normalement partie du procédé de soudage, les manipuler avec précaution.

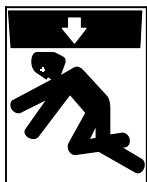
- Protéger les bouteilles de gaz comprimé d'une chaleur excessive, des chocs mécaniques, des dommages physiques, du laitier, des flammes ouvertes, des étincelles et des arcs.
- Placer les bouteilles debout en les fixant dans un support stationnaire ou dans un porte-bouteilles pour les empêcher de tomber ou de se renverser.
- Tenir les bouteilles éloignées des circuits de soudage ou autres circuits électriques.
- Ne jamais placer une torche de soudage sur une bouteille à gaz.
- Une électrode de soudage ne doit jamais entrer en contact avec une bouteille.
- Ne jamais souder une bouteille pressurisée – risque d'explosion.
- Utiliser seulement des bouteilles de gaz protecteur, régulateurs, tuyaux et raccords convenables pour cette application spécifique ; les maintenir ainsi que les éléments associés en bon état.
- Détourner votre visage du détendeur-régulateur lorsque vous ouvrez la soupape de la bouteille.
- Le couvercle du détendeur doit toujours être en place, sauf lorsque la bouteille est utilisée ou qu'elle est reliée pour usage ultérieur.
- Utiliser les équipements corrects, les bonnes procédures et suffisamment de personnes pour soulever et déplacer les bouteilles.
- Lire et suivre les instructions sur les bouteilles de gaz comprimé, l'équipement connexe et le dépliant P-1 de la CGA (Compressed Gas Association) mentionné dans les principales normes de sécurité.

2-3. Dangers supplémentaires en relation avec l'installation, le fonctionnement et la maintenance



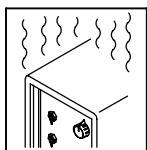
Risque D'INCENDIE OU D'EXPLOSION.

- Ne pas placer l'appareil sur, au-dessus ou à proximité de surfaces inflammables.
- Ne pas installer l'appareil à proximité de produits inflammables.
- Ne pas surcharger l'installation électrique – s'assurer que l'alimentation est correctement dimensionnée et protégée avant de mettre l'appareil en service.



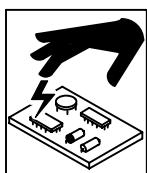
LA CHUTE DE L'APPAREIL peut blesser.

- Utiliser l'anneau de levage uniquement pour soulever l'appareil, NON PAS les chariots, les bouteilles de gaz ou tout autre accessoire.
- Utiliser un équipement de levage de capacité suffisante pour lever l'appareil.
- En utilisant des fourches de levage pour déplacer l'unité, s'assurer que les fourches sont suffisamment longues pour dépasser du côté opposé de l'appareil.



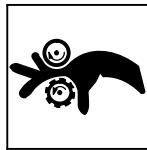
L'EMPLOI EXCESSIF peut SURCHAUFFER L'ÉQUIPEMENT.

- Prévoir une période de refroidissement ; respecter le cycle opératoire nominal.
- Réduire le courant ou le facteur de marche avant de poursuivre le soudage.
- Ne pas obstruer les passages d'air du poste.



LES CHARGES ÉLECTROSTATIQUES peuvent endommager les circuits imprimés.

- Établir la connexion avec la barrette de terre avant de manipuler des cartes ou des pièces.
- Utiliser des pochettes et des boîtes antistatiques pour stocker, déplacer ou expédier des cartes PC.



DES ORGANES MOBILES peuvent provoquer des blessures.

- Ne pas s'approcher des organes mobiles.
- Ne pas s'approcher des points de coincement tels que des rouleaux de commande.



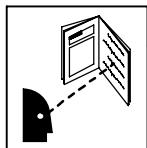
LES FILS DE SOUDAGE peuvent provoquer des blessures.

- Ne pas appuyer sur la gâchette avant d'en avoir reçu l'instruction.
- Ne pas diriger le pistolet vers soi, d'autres personnes ou toute pièce mécanique en engageant le fil de soudage.



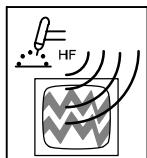
DES ORGANES MOBILES peuvent provoquer des blessures.

- S'abstenir de toucher des organes mobiles tels que des ventilateurs.
- Maintenir fermés et verrouillés les portes, panneaux, recouvrements et dispositifs de protection.
- Seules des personnes qualifiées sont autorisées à enlever les portes, panneaux, recouvrements ou dispositifs de protection pour l'entretien.
- Remettre les portes, panneaux, recouvrements ou dispositifs de protection quand l'entretien est terminé et avant de rebrancher l'alimentation électrique.



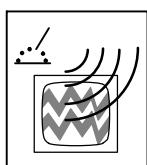
LIRE LES INSTRUCTIONS.

- Lire le manuel d'utilisation avant d'utiliser ou d'intervenir sur l'appareil.
- Utiliser uniquement des pièces de rechange Miller/Hobart.



LE RAYONNEMENT HAUTE FRÉQUENCE (HF) risque de provoquer des interférences.

- Le rayonnement haute fréquence (HF) peut provoquer des interférences avec les équipements de radio-navigation et de communication, les services de sécurité et les ordinateurs.
- Demander seulement à des personnes qualifiées familiarisées avec des équipements électroniques de faire fonctionner l'installation.
- L'utilisateur est tenu de faire corriger rapidement par un électricien qualifié les interférences résultant de l'installation.
- Si le FCC signale des interférences, arrêter immédiatement l'appareil.
- Effectuer régulièrement le contrôle et l'entretien de l'installation.
- Maintenir soigneusement fermés les portes et les panneaux des sources de haute fréquence, maintenir les éclateurs à une distance correcte et utiliser une terre et un blindage pour réduire les interférences éventuelles.



LE SOUDAGE À L'ARC risque de provoquer des interférences.

- L'énergie électromagnétique peut gêner le fonctionnement d'appareils électroniques comme des ordinateurs et des robots.
- Veiller à ce que tout l'équipement de la zone de soudage soit compatible électromagnétiquement.
- Pour réduire la possibilité d'interférence, maintenir les câbles de soudage aussi courts que possible, les grouper, et les poser aussi bas que possible (ex. par terre).
- Veiller à souder à une distance de 100 mètres de tout équipement électronique sensible.
- Veiller à ce que ce poste de soudage soit posé et mis à la terre conformément à ce mode d'emploi.
- En cas d'interférences après avoir pris les mesures précédentes, il incombe à l'utilisateur de prendre des mesures supplémentaires telles que le déplacement du poste, l'utilisation de câbles blindés, l'utilisation de filtres de ligne ou la pose de protecteurs dans la zone de travail.

2-4. Proposition californienne 65 Avertissements

▲ Les équipements de soudage et de coupe produisent des fumées et des gaz qui contiennent des produits chimiques dont l'État de Californie reconnaît qu'ils provoquent des malformations congénitales et, dans certains cas, des cancers. (Code de santé et de sécurité de Californie, chapitre 25249.5 et suivants)

▲ Les batteries, les bornes et autres accessoires contiennent du plomb et des composés à base de plomb, produits chimiques dont l'État de Californie reconnaît qu'ils provoquent des cancers et des malformations congénitales ou autres problèmes de procréation. Se laver les mains après manipulation.

Pour les moteurs à essence :

▲ Les gaz d'échappement des moteurs contiennent des produits chimiques dont l'État de Californie reconnaît qu'ils provoquent des cancers et des malformations congénitales ou autres problèmes de procréation.

Pour les moteurs diesel :

▲ Les gaz d'échappement des moteurs diesel et certains de leurs composants sont reconnus par l'État de Californie comme provoquant des cancers et des malformations congénitales ou autres problèmes de procréation.

2-5. Principales normes de sécurité

Safety in Welding, Cutting, and Allied Processes, ANSI Standard Z49.1, de Global Engineering Documents (téléphone : 1-877-413-5184, site Internet : www.global.ihs.com).

Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping, American Welding Society Standard AWS F4.1 de Global Engineering Documents (téléphone : 1-877-413-5184, site Internet : www.global.ihs.com).

National Electrical Code, NFPA Standard 70, de National Fire Protection Association, P.O. Box 9101, 1 Battery March Park, Quincy, MA 02269-9101 (téléphone : 617-770-3000, site Internet : www.nfpa.org).

Safe Handling of Compressed Gases in Cylinders, CGA Pamphlet P-1, de Compressed Gas Association, 1735 Jefferson Davis Highway, Suite 1004, Arlington, VA 22202-4102 (téléphone : 703-412-0900, site Internet : www.cganet.com).

Code for Safety in Welding and Cutting, CSA Standard W117.2, de Canadian Standards Association, Standards Sales, 178 Rexdale

Boulevard, Rexdale, Ontario, Canada M9W 1R3 (téléphone : 800-463-6727 ou à Toronto 416-747-4044, site Internet : www.csa-international.org).

Practice For Occupational And Educational Eye And Face Protection, ANSI Standard Z87.1, de American National Standards Institute, 11 West 42nd Street, New York, NY 10036-8002 (téléphone : 212-642-4900, site Internet : www.ansi.org).

Standard for Fire Prevention During Welding, Cutting, and Other Hot Work, NFPA Standard 51B, de National Fire Protection Association, P.O. Box 9101, 1 Battery March Park, Quincy, MA 02269-9101 (téléphone : 617-770-3000, site Internet : www.nfpa.org).

OSHA, Occupational Safety and Health Standards for General Industry, Title 29, Code of Federal Regulations (CFR), Part 1910, Subpart Q, and Part 1926, Subpart J, de U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250 (il y a 10 bureaux régionaux—le téléphone de la région 5, Chicago, est 312-353-2220, site Internet : www.osha.gov).

2-6. Information EMF

Considérations sur le soudage et les effets de basse fréquence et des champs magnétiques et électriques.

Le courant de soudage, pendant son passage dans les câbles de soudage, causera des champs électromagnétiques. Il y a eu et il y a encore un certain souci à propos de tels champs. Cependant, après avoir examiné plus de 500 études qui ont été faites pendant une période de recherche de 17 ans, un comité spécial ruban bleu du National Research Council a conclu : « L'accumulation de preuves, suivant le jugement du comité, n'a pas démontré que l'exposition aux champs magnétiques et champs électriques à haute fréquence représente un risque à la santé humaine ». Toutefois, des études sont toujours en cours et les preuves continuent à être examinées. En attendant que les conclusions finales de la recherche soient établies, il vous serait souhaitable de réduire votre exposition aux champs électromagnétiques pendant le soudage ou le coupage.

Pour réduire les champs magnétiques sur le poste de travail, appliquer les procédures suivantes :

1. Maintenir les câbles ensemble en les tordant ou en les enveloppant.
2. Disposer les câbles d'un côté et à distance de l'opérateur.
3. Ne pas courber pas et ne pas entourer pas les câbles autour de votre corps.
4. Garder le poste de soudage et les câbles le plus loin possible de vous.
5. Connecter la pince sur la pièce aussi près que possible de la soudure.

En ce qui concerne les stimulateurs cardiaques

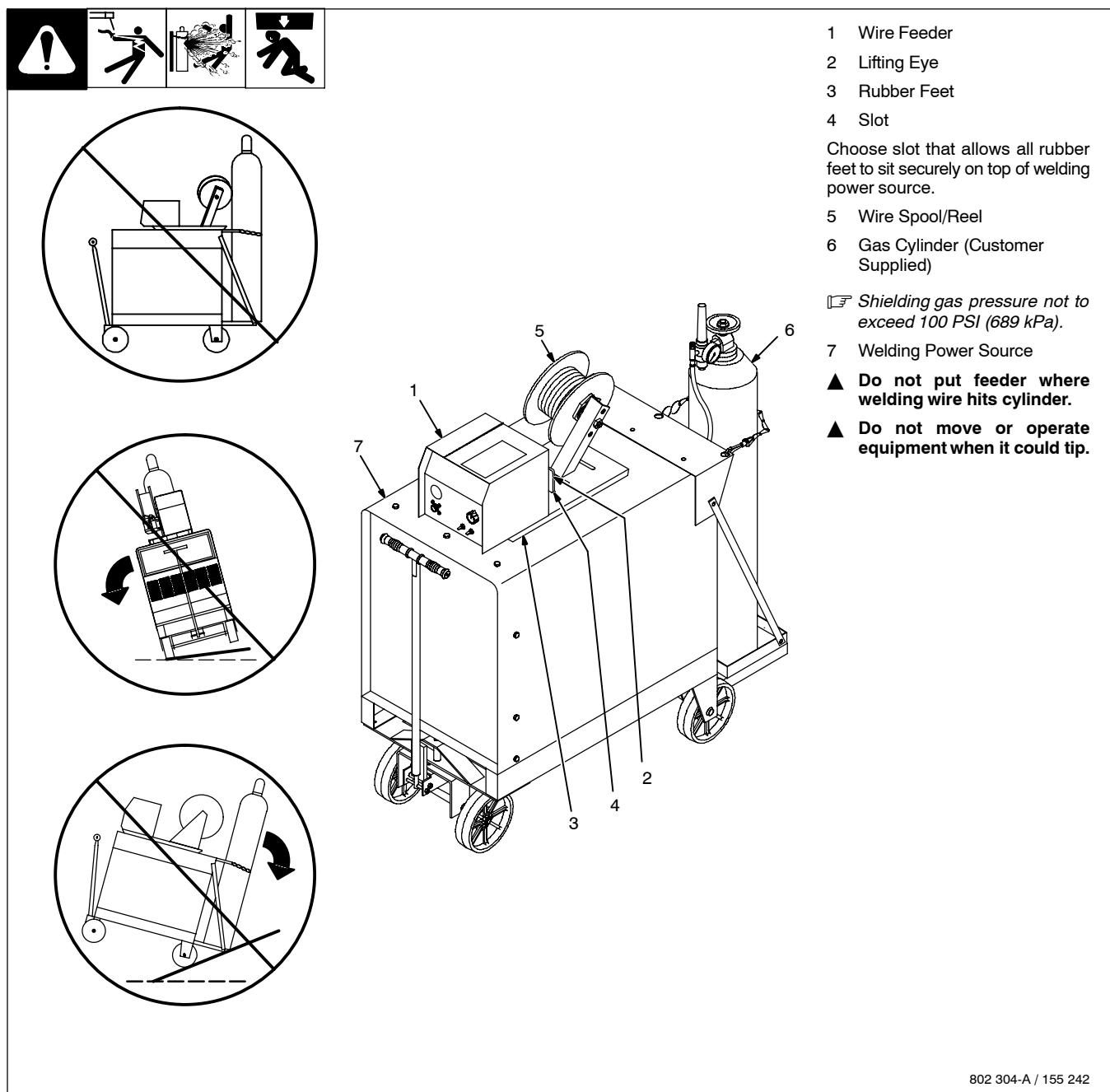
Les porteurs de stimulateur cardiaque doivent consulter leur médecin avant de souder ou d'approcher des opérations de soudage. Si le médecin approuve, il est recommandé de suivre les procédures précédentes.

SECTION 3 – INSTALLATION

3-1. Specifications

| Type of Input Power | Welding Power Source Type | Wire Feed Speed Range | Wire Diameter Range | Welding Circuit Rating | Overall Dimensions | Weight |
|--|--|----------------------------------|--|---|--|---------------|
| 115 Volts AC Single Phase 2 Amperes 50/60 Hz | Constant Voltage (CV) DC And Contactor Control | 75 to 750 ipm (1.9 To 19 mpm) | .030 To 3/32 in (0.8 To 2.4 mm) Max Spool Weight: 60 lb (27 kg) | 100 Volts, 500 Amperes, 100% Duty Cycle | Length: 23-1/2 in (597 mm) Width: 10-3/4 in (273 mm) Height: 11 in (279 mm) | 40 lb (18 kg) |

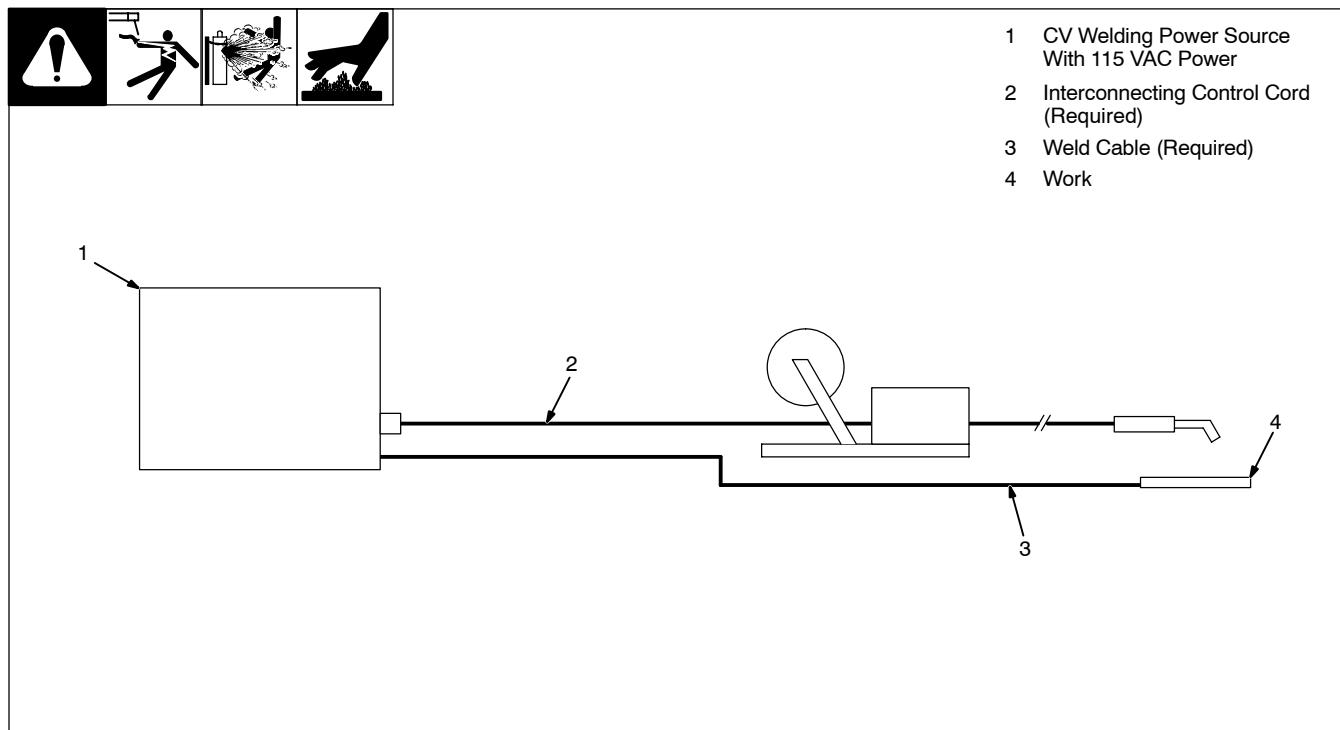
3-2. Site Selection



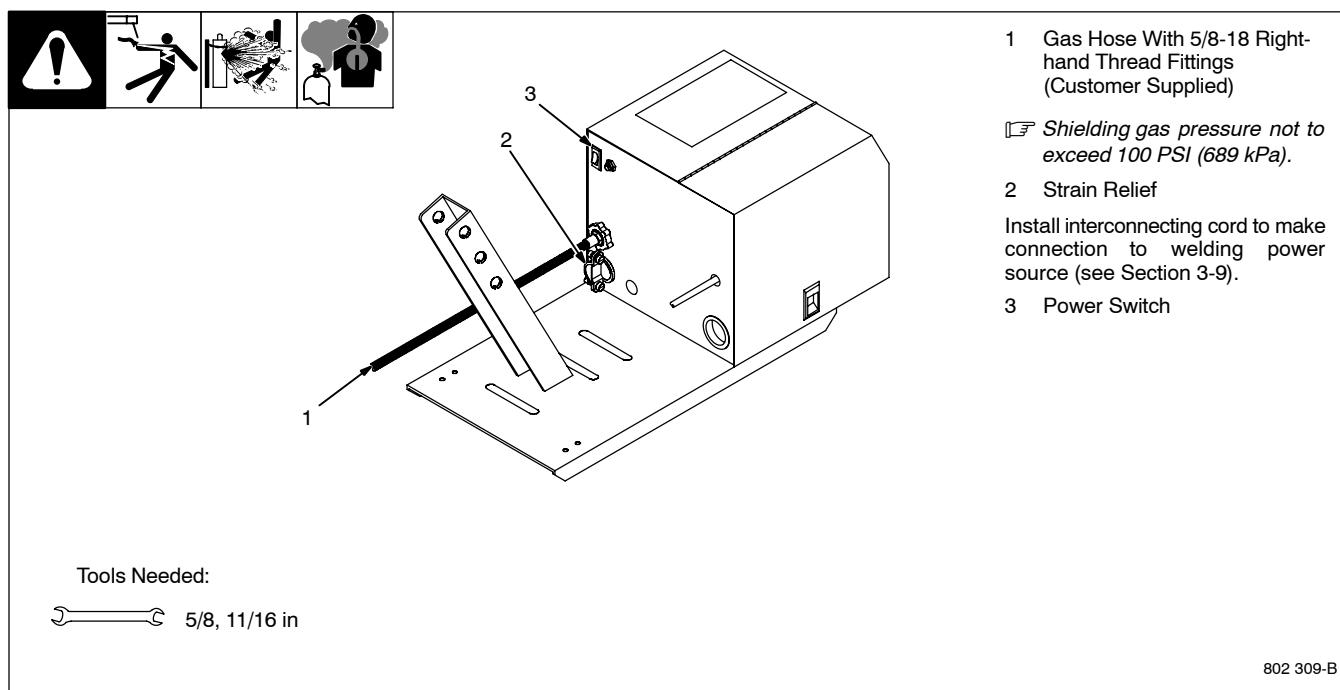
3-3. Gun Recommendation Table

| Process | Gun |
|-----------------------------|------------|
| GMAW – Hard or Corded Wires | M25 Or M40 |
| FCAW – Self-Shielding Wires | GA-40GL |

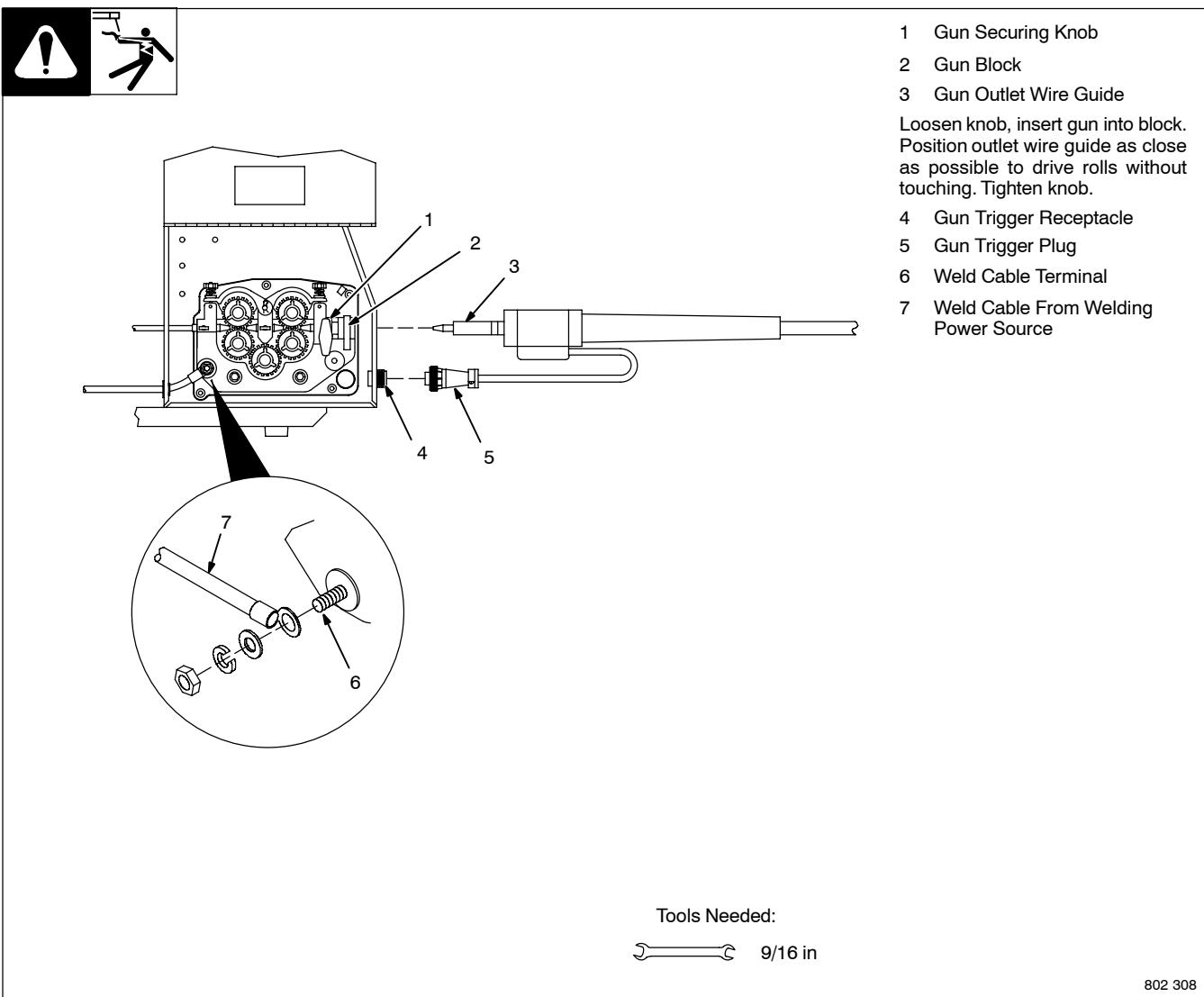
3-4. Equipment Connection Diagrams



3-5. Rear Panel Connections And Power Switch Location

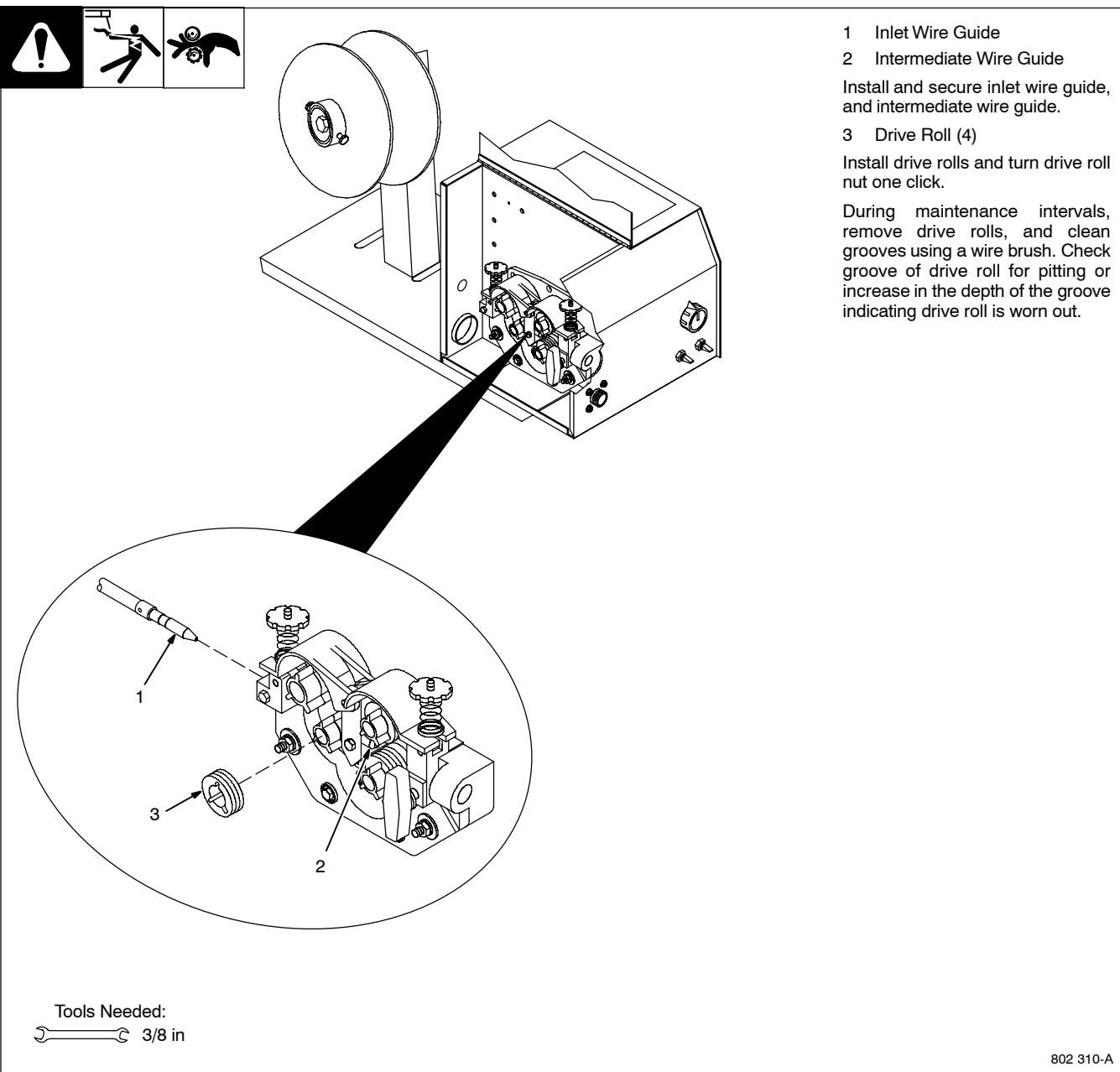


3-6. Connecting Welding Gun And Weld Cable

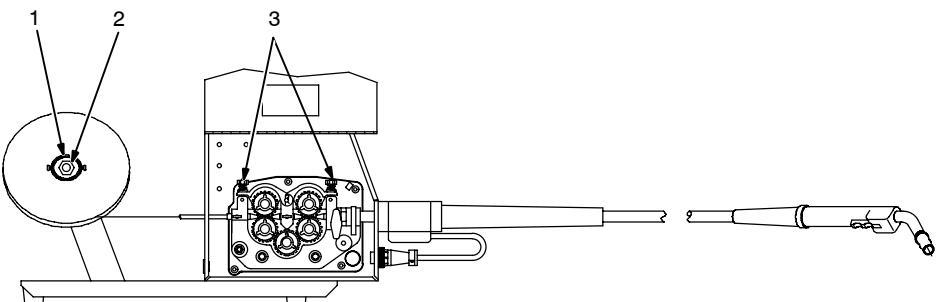


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3-7. Installing Wire Guide And Drive Roll



3-8. Installing And Threading Welding Wire



- 1 Retaining Ring
- 2 Hub Tension Adjustment Nut

If necessary, move hub on support for use of different size wire spool.

Remove retaining ring, and install spool so hub pin fits spool hole. Reinstall retaining ring.

Adjust tension nut so wire is taut when wire feed stops.

- 3 Pressure Assembly Adjustment Knob

Lay gun cable out straight.

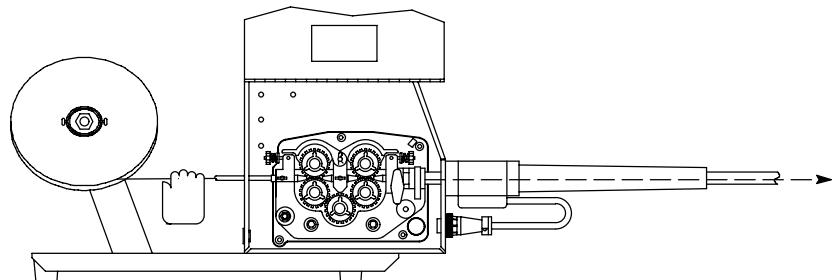
A Open pressure assemblies, hold wire tightly, and cut off end. Push wire through guides into gun.

B Close and tighten pressure assemblies. Press JOG button until the wire comes out of the gun.

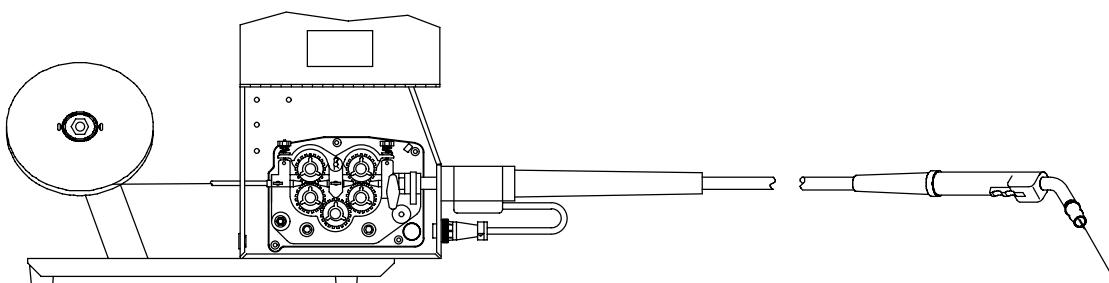
C To adjust drive roll pressure, press gun trigger to feed wire against wood surface. Tighten knob so wire does not slip.

Cut off wire. Close door.

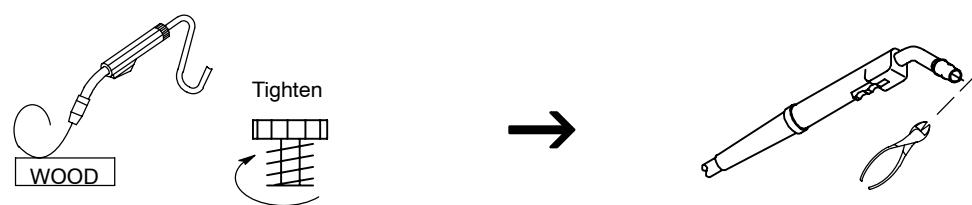
A



B



C

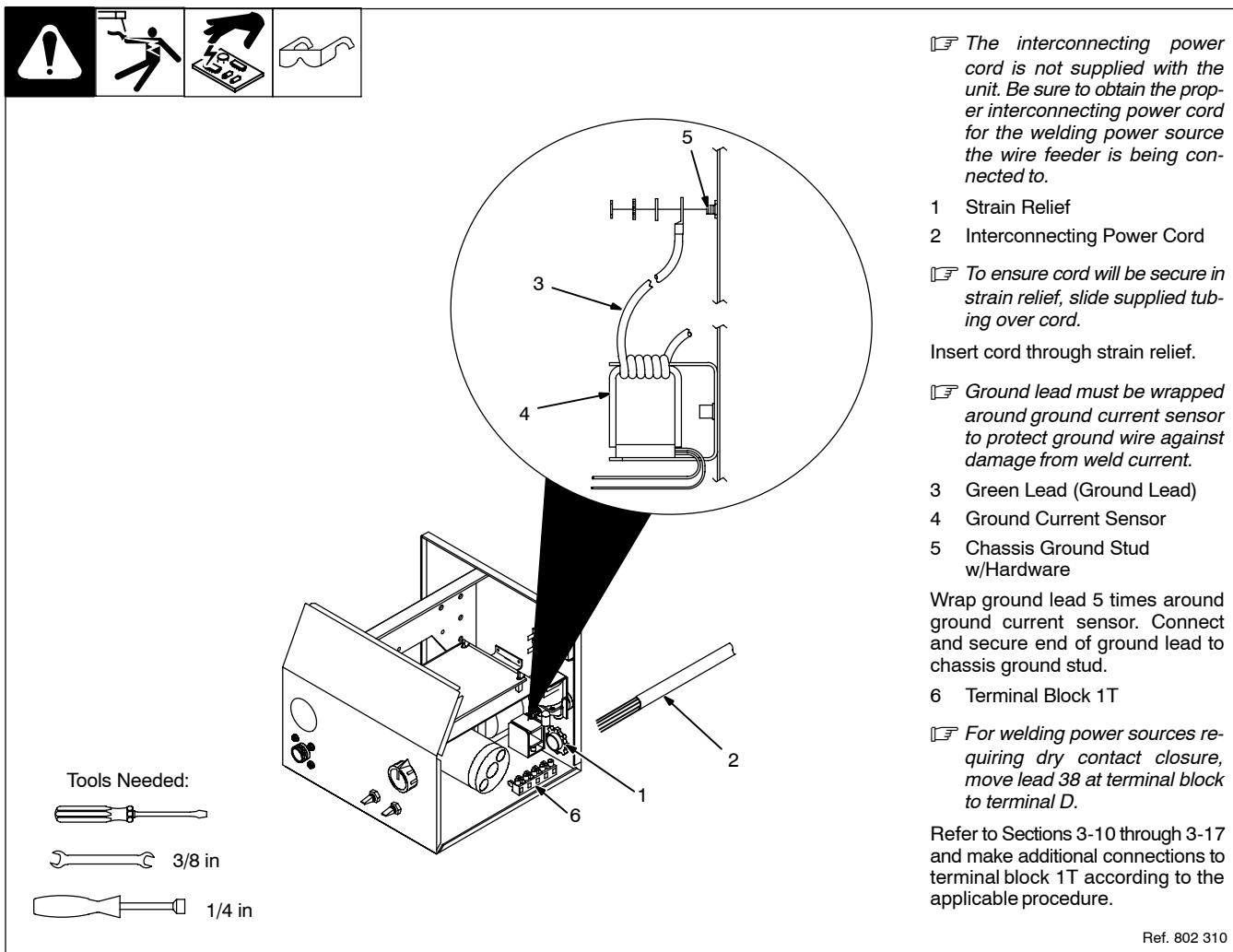


Tools Needed:

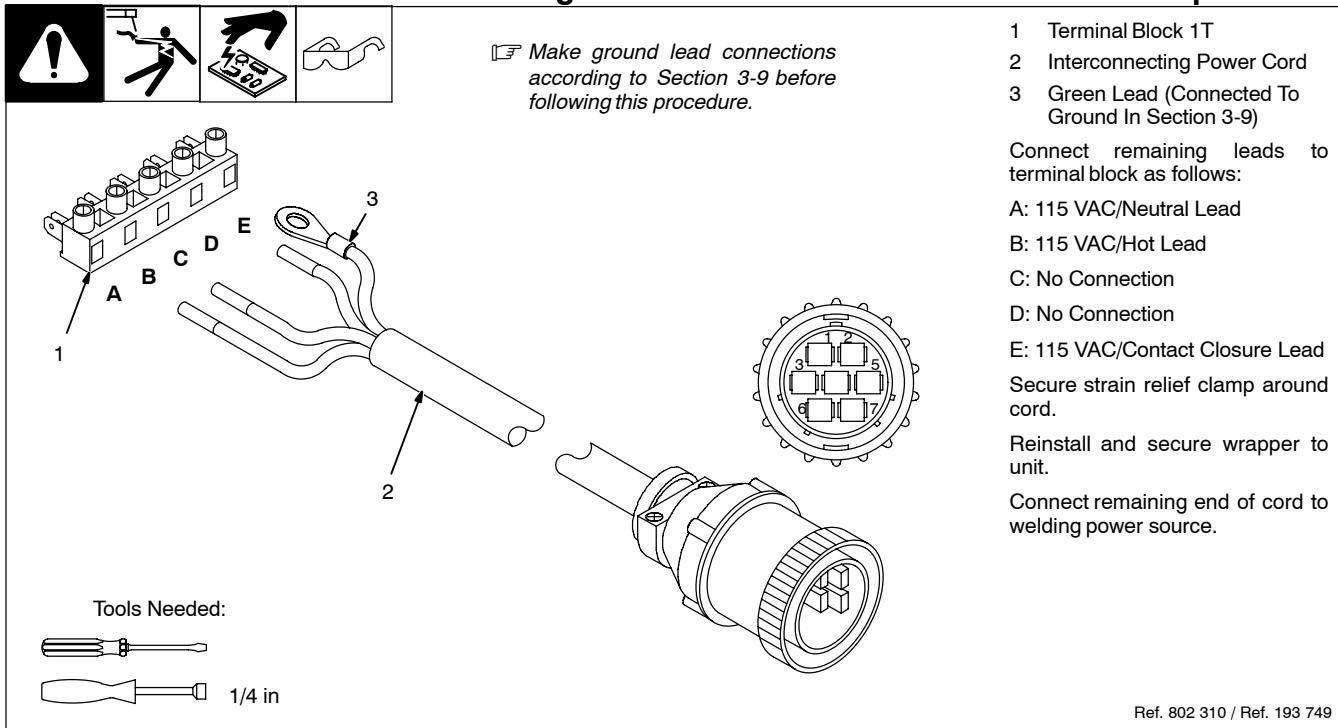
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Ref. 802 308 / S-0627-A

3-9. Interconnecting Power Cord Ground Lead Connection (All Models)



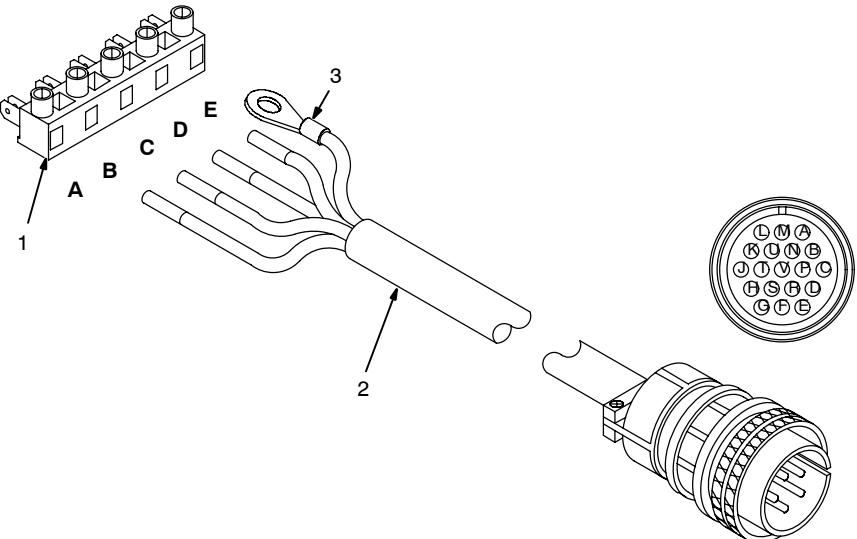
3-10. Connection For L-TEC Welding Power Sources With 7-Flat Socket Receptacle



3-11. Connection For Hobart Welding Power Sources With 19-Socket Receptacle



 Make ground lead connections according to Section 3-9 before following this procedure.



1 Terminal Block 1T
2 Interconnecting Power Cord
3 Green Lead (Connected To Ground In Section 3-9)

Connect remaining leads to terminal block as follows:

A: 115 VAC/Neutral Lead
B: 115 VAC/Hot Lead
C: No Connection
D: Dry Contact Closure w/Respect To Terminal E Lead
E: 115 VAC/Contact Closure Lead

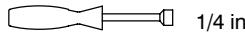
 For welding power sources requiring dry contact closure, move lead 38 at terminal block to terminal D.

Secure strain relief clamp around cord.
Reinstall and secure wrapper to unit.
Connect remaining end of cord to welding power source.

Ref. 802 310 / Ref. 193 749

Tools Needed:

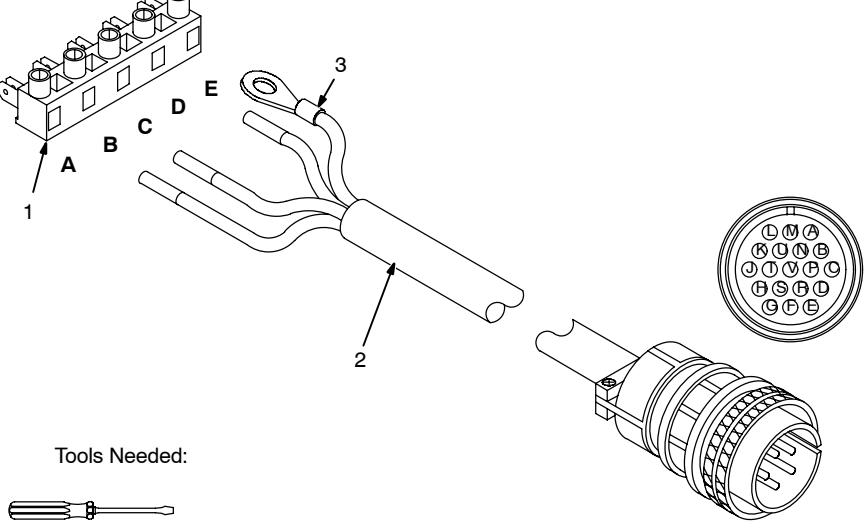




3-12. Connection For L-TEC Welding Power Sources With 19-Socket Receptacle



 Make ground lead connections according to Section 3-9 before following this procedure.



1 Terminal Block 1T
2 Interconnecting Power Cord
3 Green Lead (Connected To Ground In Section 3-9)

Connect remaining leads to terminal block as follows:

A: 115 VAC/Neutral Lead
B: 115 VAC/Hot Lead
C: No Connection
D: No Connection
E: 115 VAC/Contact Closure Lead

Secure strain relief clamp around cord.
Reinstall and secure wrapper to unit.
Connect remaining end of cord to welding power source.

Tools Needed:



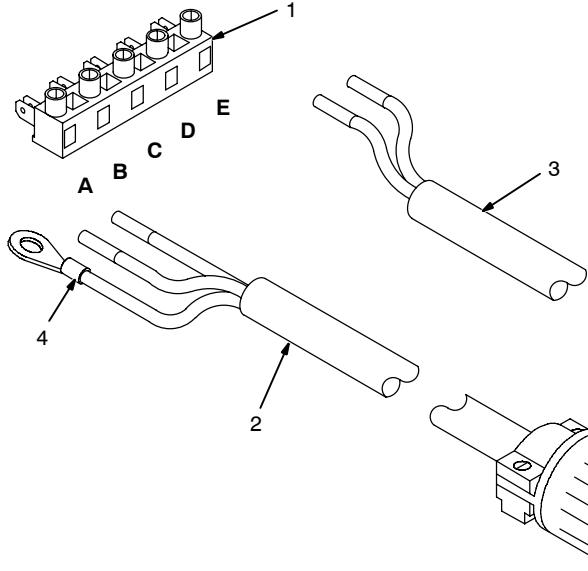


Ref. 802 310 / Ref. 193 749

3-13. Connection For Hobart Welding Power Sources With 5-Socket And 115 Volt AC Receptacles



Make ground lead connections according to Section 3-9 before following this procedure.



1 Terminal Block 1T
 2 3-Conductor Cord
 3 2-Conductor Cord
 4 Green Lead (Connected To Ground In Section 3-9)

Connect remaining leads to terminal block as follows:

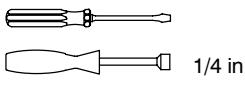
A: 115 VAC/Neutral Lead
 B: 115 VAC/Hot Lead
 C: No Connection
 D: Dry Contact Closure w/Respect To Terminal E Lead
 E: 115 VAC/Contact Closure Lead

For welding power sources requiring dry contact closure, move lead 38 at terminal block to terminal D.

Secure strain relief clamp around cords.
 Reinstall and secure wrapper to unit.
 Connect remaining cord ends to welding power source.

Ref. 802 310 / Ref. 193 749

Tools Needed:

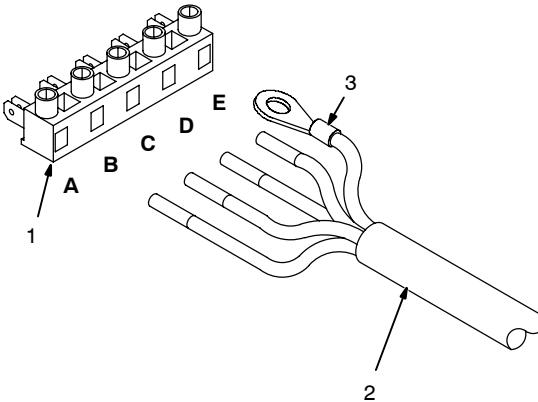


1/4 in

3-14. Connection For Lincoln Welding Power Sources With 14-Socket Receptacle



Make ground lead connections according to Section 3-9 before following this procedure.



1 Terminal Block 1T
 2 Interconnecting Power Cord
 3 Green Lead (Connected To Ground In Section 3-9)

Connect remaining leads to terminal block as follows:

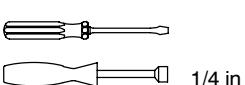
A: 115 VAC/Neutral Lead
 B: 115 VAC/Hot Lead
 C: No Connection
 D: Dry Contact Closure w/Respect To Terminal E Lead
 E: 115 VAC/Contact Closure Lead

For welding power sources requiring dry contact closure, move lead 38 at terminal block to terminal D.

Secure strain relief clamp around cord.
 Reinstall and secure wrapper to unit.
 Connect remaining end of cord to welding power source.

Ref. 802 310 / Ref. 193 749

Tools Needed:

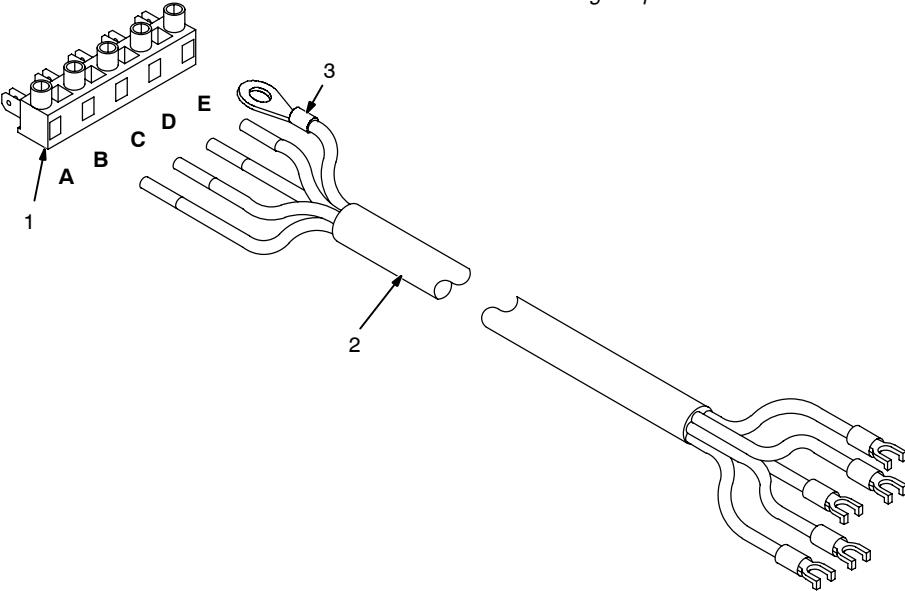


1/4 in

3-15. Connection For Lincoln Welding Power Sources With Terminal Strip Connections



 Make ground lead connections according to Section 3-9 before following this procedure.



1 Terminal Block 1T
2 Interconnecting Power Cord
3 Green Lead (Connected To Ground In Section 3-9)

Connect remaining leads to terminal block as follows:

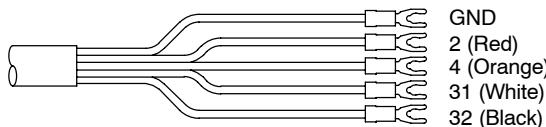
A: 115 VAC/Neutral Lead
B: 115 VAC/Hot Lead
C: No Connection
D: Dry Contact Closure w/Respect To Terminal E Lead
E: 115 VAC/Contact Closure Lead

 For welding power sources requiring dry contact closure, move lead 38 at terminal block to terminal D.

Secure strain relief clamp around cord.
Reinstall and secure wrapper to unit.
Connect remaining end of cord to welding power source.

Tools Needed:



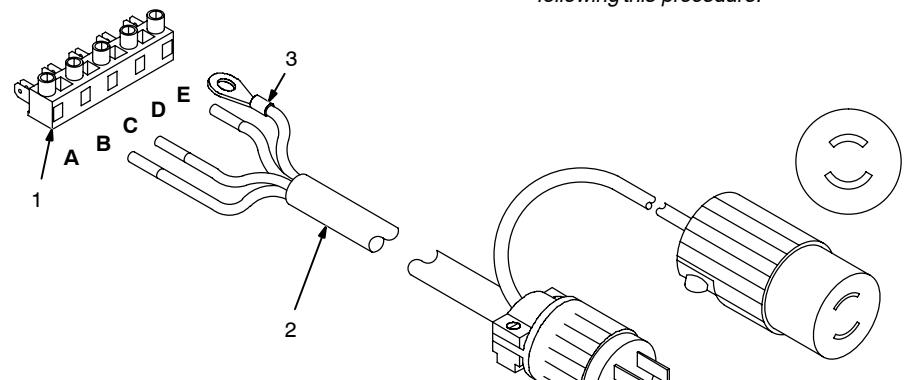


Ref. 802 310 / Ref. 193 749

3-16. Connection For AIRCO Welding Power Sources With Two-Prong Twistlock And 115 Volts AC Receptacles



 Make ground lead connections according to Section 3-9 before following this procedure.



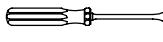
1 Terminal Block 1T
2 Interconnecting Power Cord
3 Green Lead (Connected To Ground In Section 3-9)

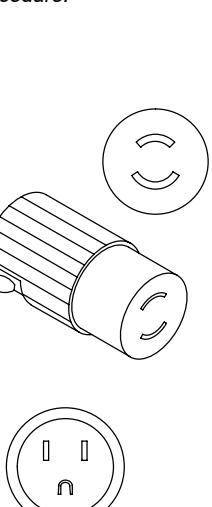
Connect remaining leads to terminal block as follows:

A: 115 VAC/Neutral Lead
B: 115 VAC/Hot Lead
C: No Connection
D: No Connection
E: 115 VAC/Contact Closure Lead

Secure strain relief clamp around cord.
Reinstall and secure wrapper to unit.
Connect remaining end of cord to welding power source.

Tools Needed:



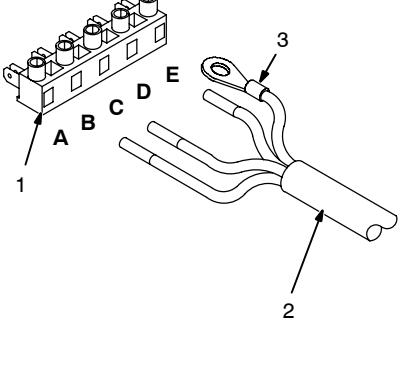


Ref. 802 310 / Ref. 193 749

3-17. Connection For Welding Power Sources With Hubbell Receptacles



 Make ground lead connections according to Section 3-9 before following this procedure.



1 Terminal Block 1T
2 Interconnecting Power Cord
3 Green Lead (Connected To Ground In Section 3-9)

Connect remaining leads to terminal block as follows:

A: 115 VAC/Neutral Lead
B: 115 VAC/Hot Lead
C: No Connection
D: No Connection
E: 115 VAC/Contact Closure Lead

Secure strain relief clamp around cord.

Reinstall and secure wrapper to unit.

Connect remaining end of cord to welding power source.

Tools Needed:



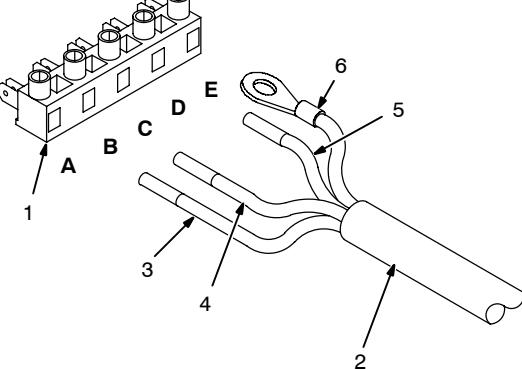

1/4 in

Ref. 802 310 / Ref. 193 749

3-18. Connection For Miller Welding Power Sources With 14-Socket Receptacle



 Make ground lead connections according to Section 3-9 before following this procedure.



1 Terminal Block 1T
2 Interconnecting Power Cord
3 White Lead
4 Black Lead
5 Red Lead
6 Green Lead (Connected To Ground In Section 3-9)

Connect remaining leads to terminal block as follows:

A: White Lead (115 VAC/Neutral)
B: Black Lead (115 VAC/Hot)
C: No Connection
D: No Connection
E: Red Lead (115 VAC/Contact Closure)

Secure strain relief clamp around cord.

Reinstall and secure wrapper to unit.

Connect remaining end of cord to welding power source.

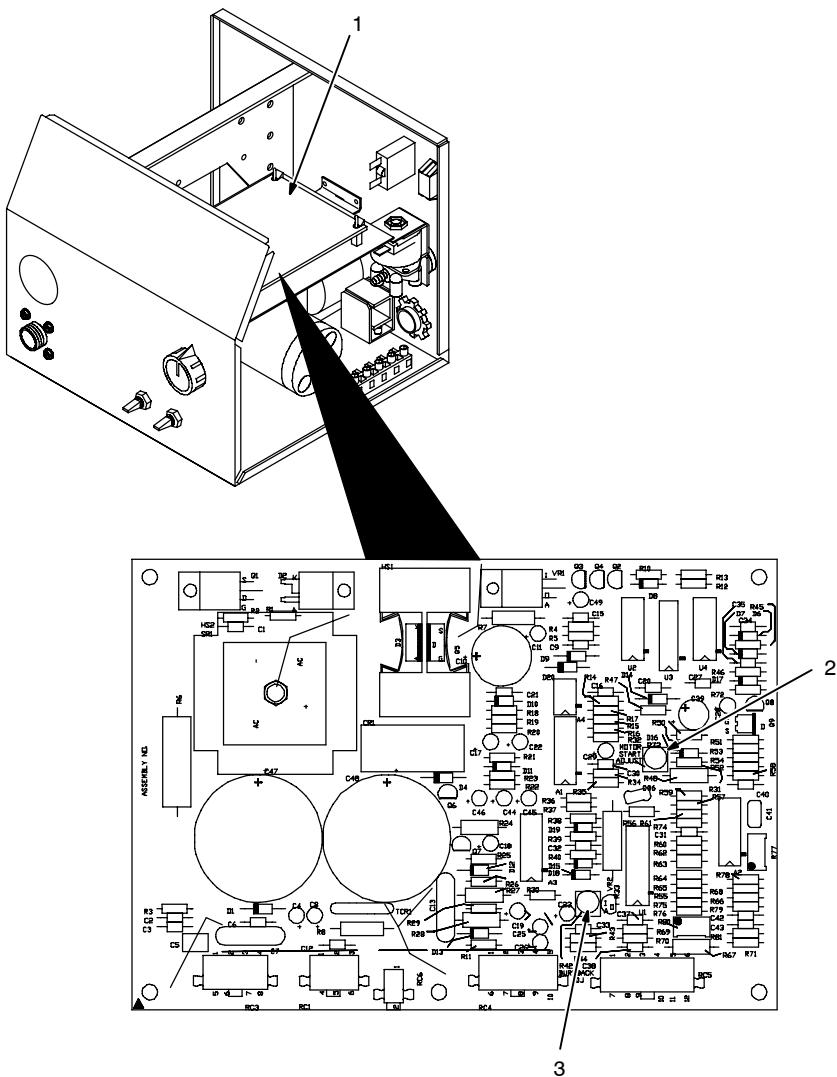
Tools Needed:




1/4 in

Ref. 802 310 / Ref. 193 749

3-19. Motor Start/Burnback Control



To change wire feed starting speed proceed as follows:

Turn Off unit and welding power source.

Remove wrapper.

- 1 Motor Board PC1
- 2 Motor Start Control Potentiometer R73

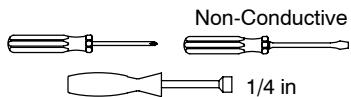
Remove protective white rubber cap before making adjustment. Adjust potentiometer R73 using a small nonconductive screwdriver. Rotate potentiometer clockwise to increase time it takes the motor to ramp up to speed.

- 3 Burnback Potentiometer R42

Remove protective white rubber cap before making adjustment. Adjust potentiometer R42 using a small nonconductive screwdriver. Rotate potentiometer clockwise to increase burnback time.

Reinstall wrapper.

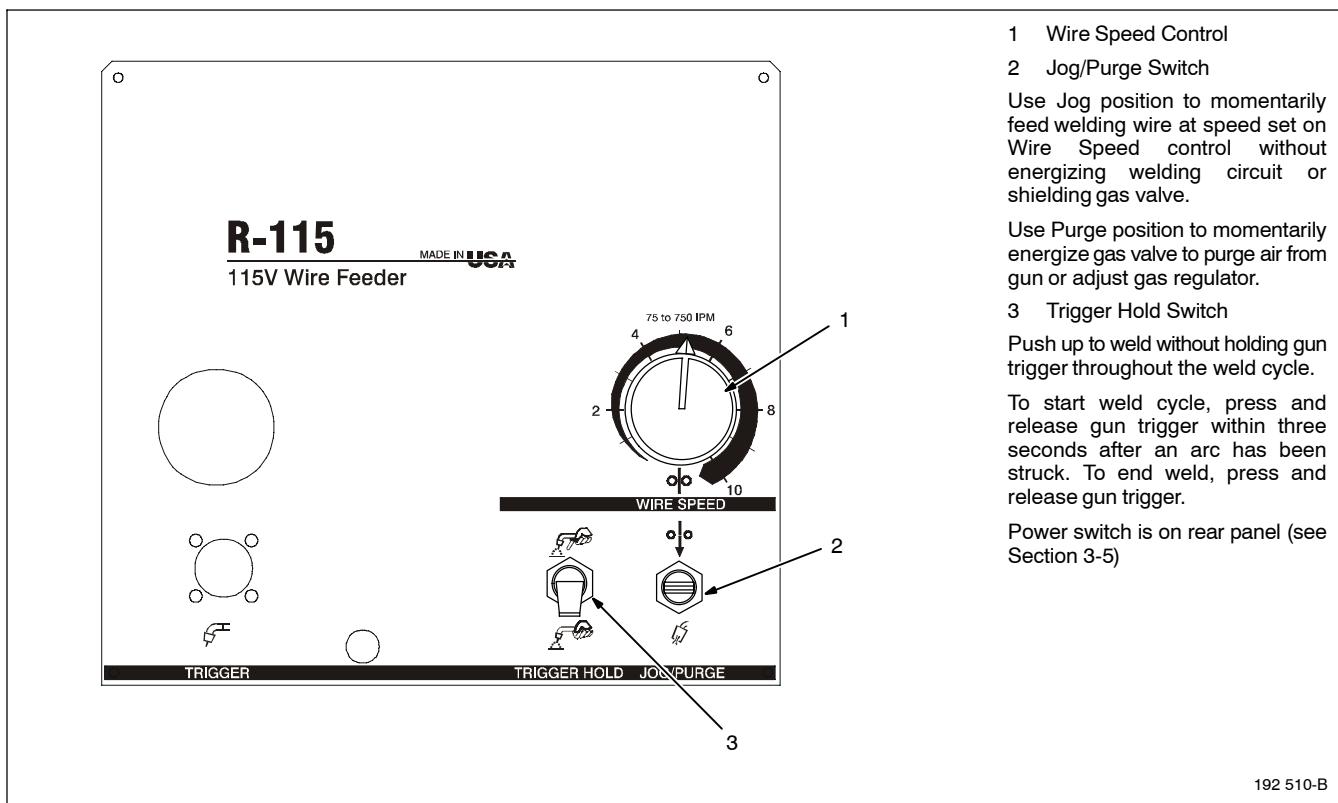
Tools Needed:



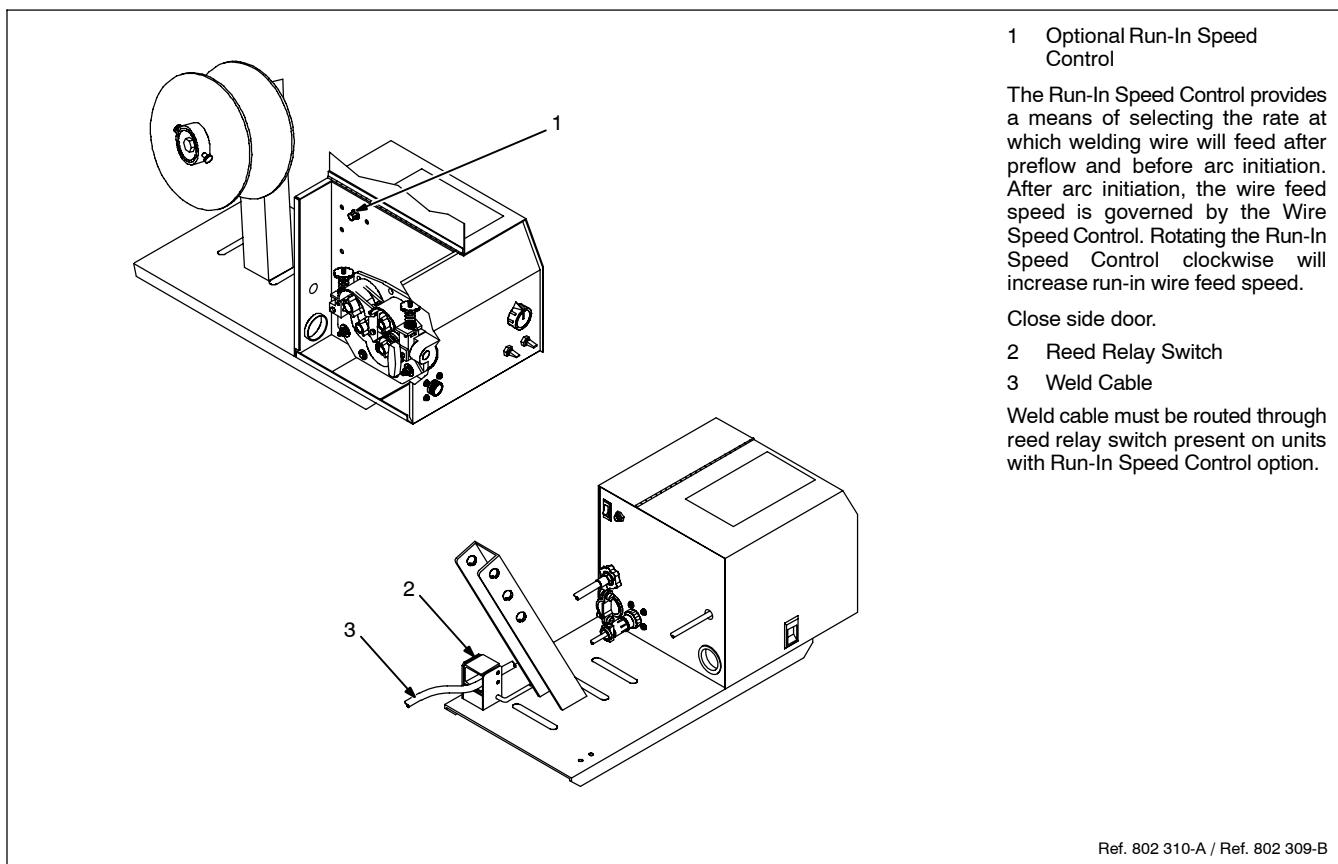
Ref. 802 310 / 192 653

SECTION 4 – OPERATION

4-1. Front Panel Controls

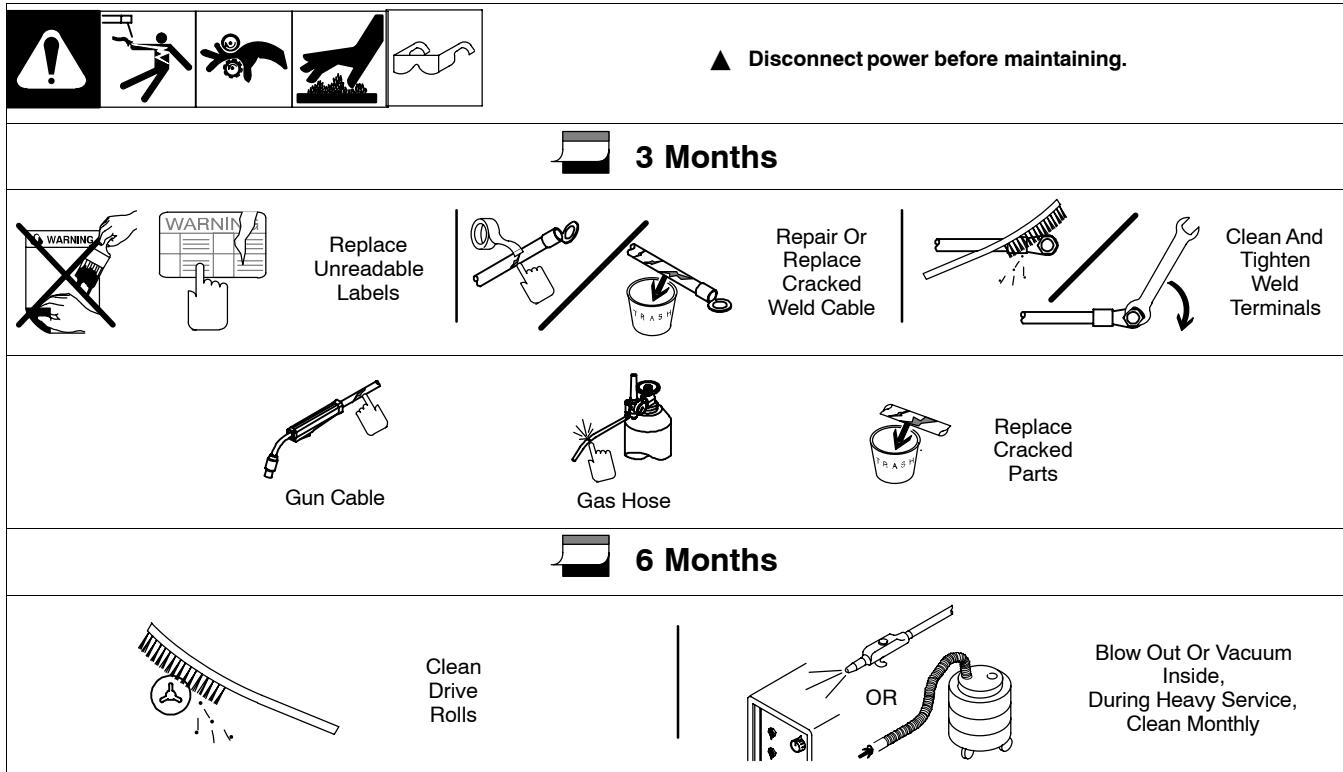


4-2. Optional Side Panel Controls

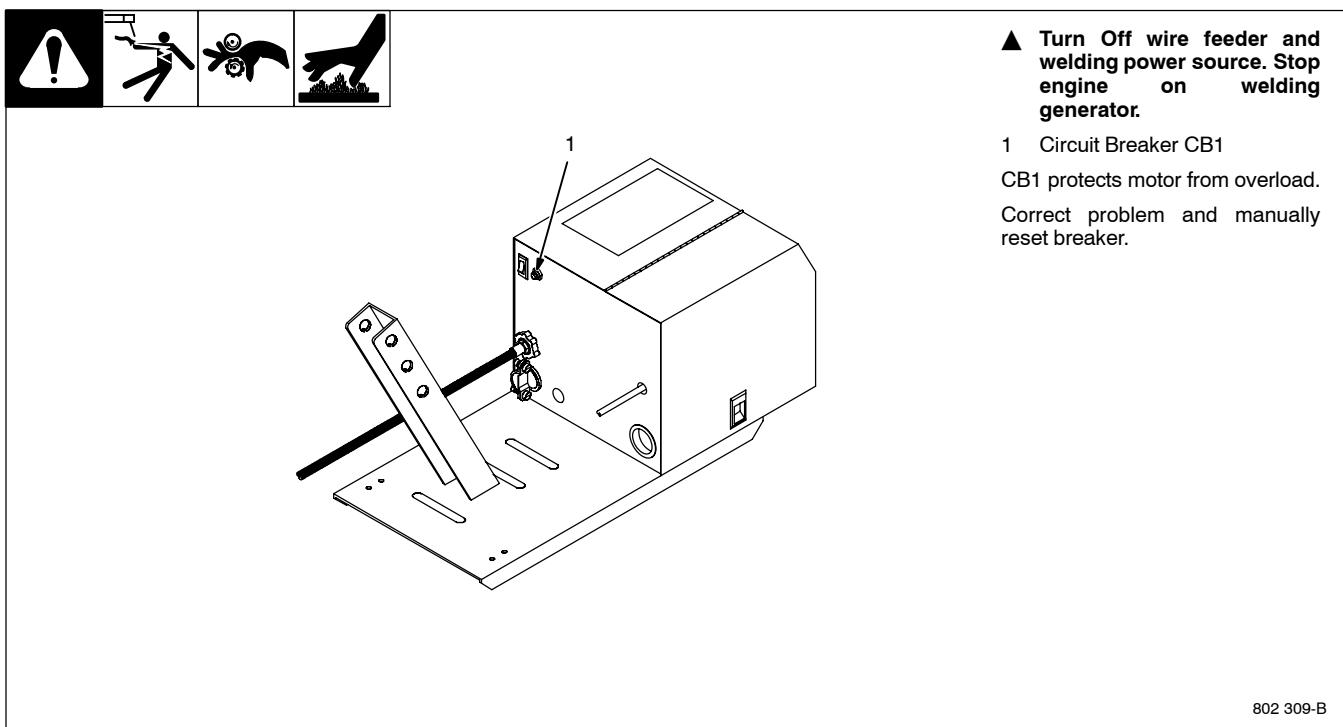


SECTION 5 – MAINTENANCE & TROUBLESHOOTING

5-1. Routine Maintenance



5-2. Overload Protection



5-3. Troubleshooting

|  | | | | |
|--|--|--|--|--|
| Trouble | Remedy | | | |
| Wire does not feed, unit completely inoperative. | Turn Power switch On. | | | |
| | Check circuit breaker CB1 (see Section 5-2). | | | |
| | Check Interconnecting control cord connections (see Section 3-9). | | | |
| | Check input power. | | | |
| Wire does not feed. | Check circuit breaker CB1 (see Section 5-2). | | | |
| | Check gun trigger connection at wire feeder. Check gun trigger leads and trigger switch. See gun Owner's Manual. | | | |
| | Check ground current sensor (see Section 3-9). | | | |
| | Check welding circuit for shorts to case activating ground current sensor. | | | |
| | Have Factory Authorized Service Agent check drive motor and control board PC1. | | | |
| Wire feeds erratically. | Readjust hub tension and drive roll pressure (see Section 3-8). | | | |
| | Use correct size drive roll (see Parts List). | | | |
| | Clean or replace dirty or worn drive roll (see Section 3-7). | | | |
| | Remove weld spatter around nozzle opening. | | | |
| | Replace contact tip or liner. See gun Owner's Manual. | | | |
| | Have Factory Authorized Service Agent check drive motor and control board PC1. | | | |
| Wire feeds when Jog switch is pressed but not when gun trigger is pressed. | Check gun trigger connection at wire feeder. Check gun trigger leads and trigger switch. See gun Owner's Manual. | | | |
| Wire feeds as soon as power is applied. | Check gun trigger. See gun Owner's Manual. | | | |
| Wire does not feed until trigger is pressed but continues to feed after trigger is released. | Check for short between gun trigger leads and weld cable. Repair or replace gun trigger leads. | | | |
| Gas does not flow; wire feeds. | Check gas valve and flowmeter. | | | |

SECTION 6 – ELECTRICAL DIAGRAM

IMPORTANT: TO ENSURE ADEQUATE GROUND PROTECTION, WRAP GREEN GROUND LEAD THROUGH GROUND

WRAP GREEN GROUND LEAD THROUGH GROUND

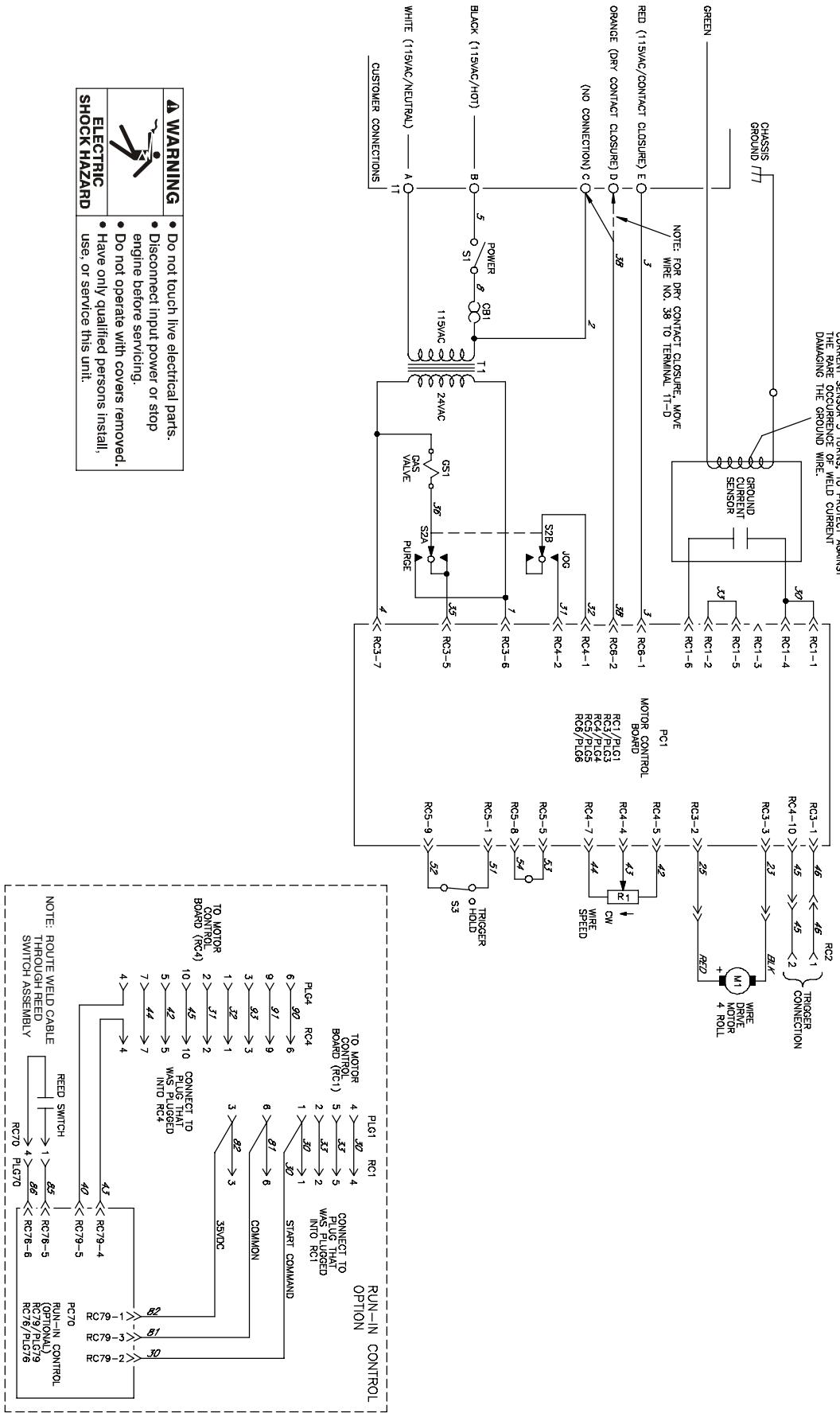
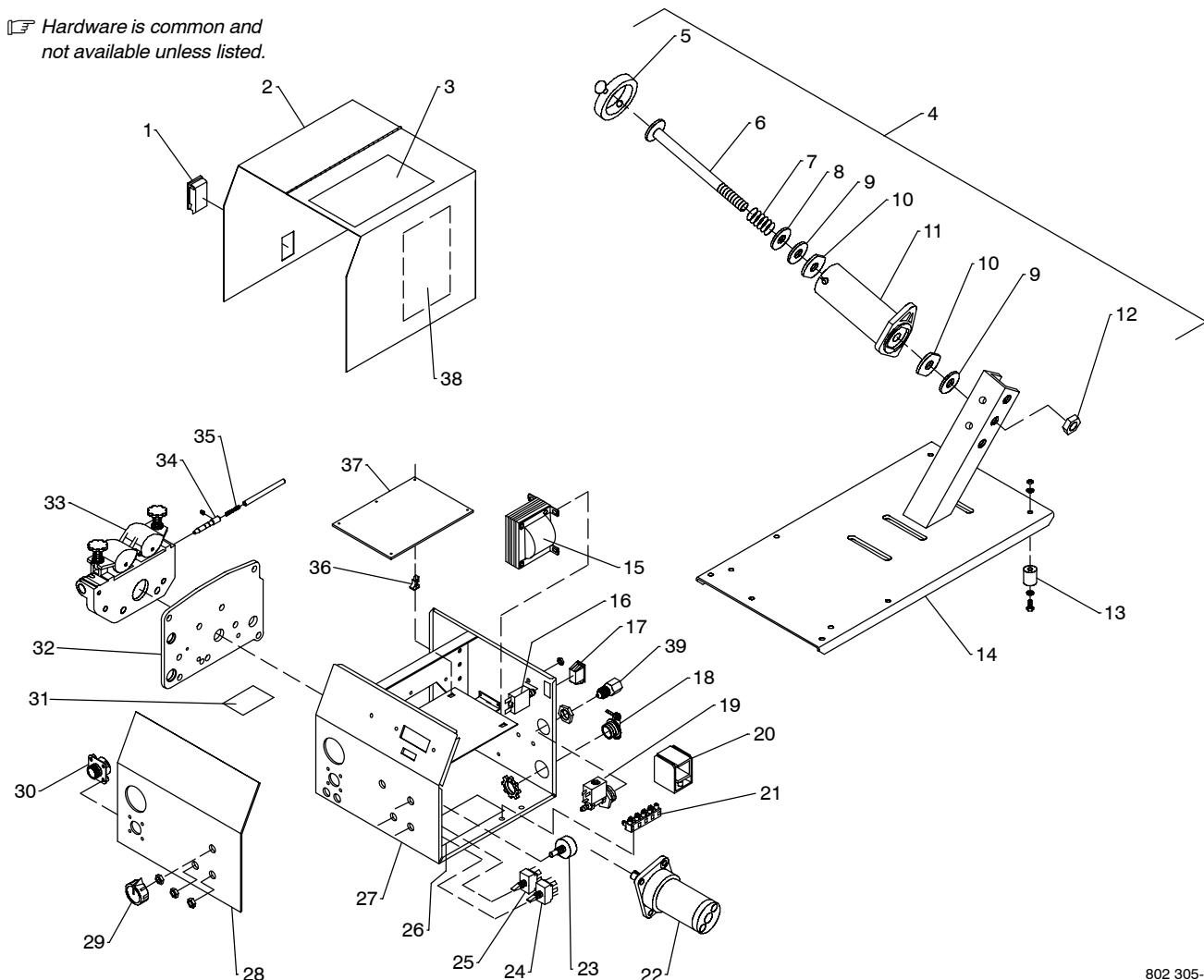


Figure 6-1. Circuit Diagram For Wire Feeder With Optional Equipment

SECTION 7 – PARTS LIST

Hardware is common and not available unless listed.



802 305-D

Figure 7-1. Main Assembly

| Item No. | Dia. Mkgs. | Part No. | Description | Quantity |
|----------|------------|----------|-------------|----------|
|----------|------------|----------|-------------|----------|

Figure 7-1. Main Assembly

| | | | |
|---------------------|-----------|--|---|
| 1 | 089 899 | LATCH | 1 |
| 2 | +198 651 | WRAPPER | 1 |
| 126 873 | | BUMPER | 1 |
| 3 | 134 464 | LABEL, warning electric shock | 1 |
| 4 | 072 094 | HUB & SPINDLE ASSEMBLY, (consisting of) | 1 |
| 5 | 058 427 | RING, retaining spool | 1 |
| 6 | 180 572 | SHAFT, spool support | 1 |
| 7 | 010 233 | SPRING, cprsn .970 OD x .120 wire x 1.250 | 1 |
| 8 | 057 971 | WASHER, flat stl keyed 1.500dia x .125thk | 1 |
| 9 | 010 191 | WASHER, fbr .656 ID x 1.500 OD x .125thk | 2 |
| 10 | 058 628 | WASHER, brake stl | 2 |
| 11 | 058 428 | HUB, spool | 1 |
| 12 | 135 205 | NUT, stl slflkg hex reg .625-11 w/nylon insert | 1 |
| 13 | 134 306 | FOOT, rbr 1.250dia x 1.375 high | 4 |
| 14 | 137 461 | BASE | 1 |
| 15 | T1 | TRANSFORMER, control 115/24VAC | 1 |
| 16 | S1 | SWITCH, rocker SPST 10A 250VAC | 1 |
| 17 | CB1 | CIRCUIT BREAKER, man reset 1P 2A 250VAC | 1 |

| Item No. | Dia. Mkg. | Part No. | Description | Quantity |
|--|-----------|----------|---|----------|
| Figure 7-1. Main Assembly (Continued) | | | | |
| 18 | | 044 426 | CONNECTOR, clamp cable | 1 |
| 19 | GS1 | 228 036 | VALVE, 24VAC 1way .750-14 thd 2mm orf 100PSI | 1 |
| 20 | GFI | 193 440 | SWITCH, ground current sensor | 1 |
| 21 | 1T | 193 376 | BLOCK, terminal 20A 5 pole | 1 |
| | | 193 500 | LABEL, terminal mkg 20A 5 pole | 1 |
| 22 | M1 | 193 188 | MOTOR, gear 24VDC 146RPM (consisting of) | 1 |
| | | *136 745 | BRUSH & SPRING ASSEMBLY | 2 |
| 23 | R1 | 073 562 | POTENTIOMETER, C stdt stf1/T 2W 10K ohm | 1 |
| 24 | S2 | 211 476 | SWITCH, tgl SPDT 6A 125VAC | 1 |
| 25 | S3 | 134 847 | SWITCH, tgl SPDT 15A 125VAC | 1 |
| | | 189 404 | SPACER, nylon | 2 |
| 26 | | 194 401 | LABEL, warning ground current | 1 |
| 27 | | 197 328 | CASE ASSY | 1 |
| 28 | | | NAMEPLATE (order by model and serial number) | 1 |
| | RC2 | 191 239 | CONNECTOR, w/leads | 1 |
| 29 | | 097 924 | KNOB, pointer | 1 |
| 30 | | 048 282 | CONNECTOR & SOCKETS | 1 |
| 31 | | 196 956 | LABEL, warning electric shock and pinch | 1 |
| 32 | | 192 875 | INSULATOR, drive motor | 1 |
| 33 | | Fig 6-2 | WIRE DRIVE ASSEMBLY | 1 |
| 34 | | 188 149 | GUIDE, wire inlet .030 thru 5/64 in dia (consisting of) | 1 |
| 35 | | 082 050 | LINER, monocoil inlet wire | 1 |
| | | 082 036 | GUIDE, wire inlet | 1 |
| 34 | | ◆194 264 | GUIDE, wire inlet 3/32 in dia (consisting of) | 1 |
| 35 | | 082 050 | LINER, monocoil inlet wire | 1 |
| | | 194 265 | GUIDE, wire inlet | 1 |
| | | 604 612 | SCREW, set # 8-32x .12 cup pt sch stl pln | 1 |
| PLG4 | | 115 091 | HOUSING PLUG & SKTS | 1 |
| PLG3 | | 115 092 | HOUSING PLUG & SKTS | 1 |
| PLG6 | | 131 054 | HOUSING RCPT & SKTS | 1 |
| | | 120 304 | BLANK, snap-in nyl .250 mtg hole | 4 |
| | | 107 983 | BLANK, snap-in nyl .500 mtg hole | 2 |
| | | 024 103 | BLANK, snap-in nyl .750 mtg hole | 2 |
| | | 000 527 | BLANK, snap-in nyl .875 mtg hole | 1 |
| | | 010 494 | BUSHING, snap-in nyl 1.375 ID x 1.750 mtg hole | 1 |
| 36 | | 134 201 | STAND-OFF SUPPORT, PC card | 5 |
| 37 | PC1 | 207 272 | CIRCUIT CARD ASSY, motor speed control | 1 |
| 38 | | 194 362 | LABEL, warning ground | 1 |
| PC70 | | ◆210 408 | CIRCUIT CARD ASSY, control | 1 |
| | | ◆194 310 | BRACKET, mounting | 1 |
| | | ◆097 132 | STAND-OFF, 6-32 x .375 lg .250 hex | 2 |
| | | ◆093 551 | KNOB | 1 |
| | | ◆140 789 | SWITCH, reed | 1 |
| | | ◆210 436 | LABEL, indicator run-in | 1 |
| | | ◆193 719 | BRACKET, mounting receptacle | 1 |
| | | ◆115 093 | HOUSING PLUG & SOCKETS | 1 |
| | | ◆131 059 | HOUSING PLUG & SOCKETS | 1 |
| | | ◆115 091 | HOUSING PLUG & SOCKETS | 1 |
| | | ◆135 531 | HOUSING PLUG & SOCKETS | 1 |
| | | ◆048 282 | HOUSING PLUG & SOCKETS | 1 |
| 39 | | 211 989 | FITTING, w/screen | 1 |
| | | 194 308 | LABEL, miller 8.250 x 3.500 horizontal (blk/wht) | 2 |

+When ordering a component originally displaying a precautionary label, the label should also be ordered.

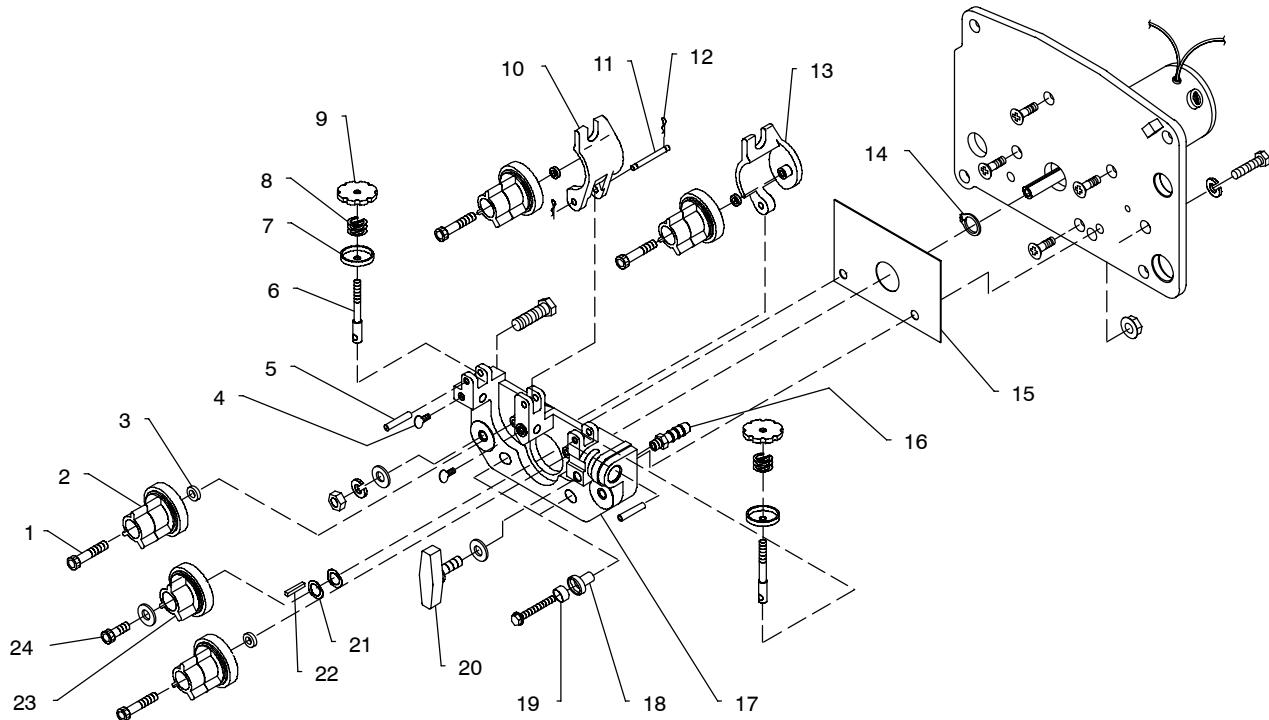
◆OPTIONAL

To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and serial number required when ordering parts from your local distributor.

| Item No. | Dia. Mkgs. | Part No. | Description | Quantity |
|--|------------|---|-------------|----------|
| Figure 7-2. Drive Assembly, Wire (Fig 7-2 Item 1) | | | | |
| 1 | 602 009 | SCREW, .250-20 x 1.250 soc hd hex gr 8 | | 4 |
| 2 | 172 075 | CARRIER, drive roll w/component 24 pitch | | 4 |
| 3 | 166 072 | SPACER, gear | | 4 |
| 4 | 054 263 | SCREW, thumb stl .250-20 x .500 | | 2 |
| 5 | 010 224 | PIN, spring CS .187 x 1.000 | | 2 |
| 6 | 089 562 | FASTENER, pinned | | 2 |
| 7 | 085 244 | WASHER, cupped stl .328 ID x .812 OD x .125 | | 2 |
| 8 | 089 477 | SPRING, cprsn .770 OD x .105 wire x 1.225 | | 2 |
| 9 | 085 243 | KNOB, adjustment tension | | 2 |
| 10 | 166 071 | LEVER, mtg pressure gear | | 1 |
| 11 | 079 634 | PIN, hinge | | 1 |
| 12 | 151 828 | PIN, cotter hair .054 x .750 | | 2 |
| 13 | 166 338 | LEVER, mtg pressure gear | | 1 |
| 14 | 605 308 | RING, rtng ext .500 shaft | | 1 |
| 15 | 187 325 | INSULATOR, drive assembly | | 1 |
| 16 | 144 172 | FITTING, hose brs barbed m 3/16 tbg x .250-20 | | 1 |
| 17 | 166 337 | HOUSING, adapter gun/feeder | | 1 |
| 18 | 072 010 | WASHER, shldr .316 ID x .812 OD x .187thk | | 2 |
| 19 | 168 590 | BUSHING, insulating | | 2 |
| 20 | 124 778 | KNOB, T 2.000 bar w/.312-18 x 1.000lg | | 1 |
| 21 | 079 625 | WASHER, wave .500 ID x .750 OD x .015thk | | 2 |
| 22 | 092 865 | KEY, stl | | 1 |
| 23 | 172 077 | CARRIER, drive roll keyed 24 pitch | | 1 |
| 24 | 121 271 | SCREW, .250-20 x .500 soc hd | | 1 |

 *Hardware is common and not available unless listed.*

See Table 7-1 For Drive
Roll & Wire Guide Kits



802 307-A

Figure 7-2. Drive Assembly, Wire

To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and serial number required when ordering parts from your local distributor.

Table 7-1. Drive Roll & Wire Guide Kits

| | | |
|-------------|---|---|
| NOTE |  | <i>Base selection of drive rolls upon the following recommended usages:</i> |
| | | 1. V-Grooved rolls for hard wire. |
| | | 2. U-Grooved rolls for soft and soft shelled cored wires. |
| | | 3. U-Cogged rolls for extremely soft shelled wires (usually hard surfacing types). |
| | | 4. V-Knurled rolls for hard shelled cored wires. |
| | | 5. Drive roll types may be mixed to suit particular requirements (example: V-Knurled roll in combination with U-Grooved). |

| Wire Diameter | | | Kit No. | Drive Roll | | Wire Guide | |
|---------------|--------------|--------|---------|------------|-----------|------------|--------------|
| Fraction | Decimal | Metric | | Part No. | Type | Inlet | Intermediate |
| .023/.025 in | .023/.025 in | 0.6 mm | 087 132 | 087 130 | V-Grooved | 056 192 | 056 206 |
| .030 in | .030 in | 0.8 mm | 046 780 | 053 695 | V-Grooved | 056 192 | 056 206 |
| .035 in | .035 in | 0.9 mm | 046 781 | 053 700 | V-Grooved | 056 192 | 056 206 |
| .040 in | .040 in | 1.0 mm | 191 917 | 053 696 | V-Grooved | 056 192 | 056 206 |
| .045 in | .045 in | 1.2 mm | 046 782 | 053 697 | V-Grooved | 056 193 | 056 207 |
| .052 in | .052 in | 1.3 mm | 046 783 | 053 698 | V-Grooved | 056 193 | 056 207 |
| 1/16 in | .062 in | 1.6 mm | 046 784 | 053 699 | V-Grooved | 056 195 | 056 209 |
| .035 in | .035 in | 0.9 mm | 044 750 | 072 000 | U-Grooved | 056 192 | 056 206 |
| .045 in | .045 in | 1.2 mm | 046 785 | 053 701 | U-Grooved | 056 193 | 056 207 |
| .052 in | .052 in | 1.3 mm | 046 786 | 053 702 | U-Grooved | 056 193 | 056 207 |
| 1/16 in | .062 in | 1.6 mm | 046 787 | 053 706 | U-Grooved | 056 195 | 056 209 |
| 5/64 in | .079 in | 2.0 mm | 046 788 | 053 704 | U-Grooved | 056 195 | 056 209 |
| 3/32 in | .094 in | 2.4 mm | 046 789 | 053 703 | U-Grooved | 056 196 | 056 210 |
| .035 in | .035 in | 0.9 mm | 046 792 | 132 958 | V-Knurled | 056 192 | 056 206 |
| .045 in | .045 in | 1.2 mm | 046 793 | 132 957 | V-Knurled | 056 193 | 056 207 |
| .052 in | .052 in | 1.3 mm | 046 794 | 132 956 | V-Knurled | 056 193 | 056 207 |
| 1/16 in | .062 in | 1.6 mm | 046 795 | 132 955 | V-Knurled | 056 195 | 056 209 |
| .068-.072 in | .068-.072 in | 1.8 mm | 089 985 | 132 959 | V-Knurled | 056 195 | 056 209 |
| 5/64 in | .079 in | 2.0 mm | 046 796 | 132 960 | V-Knurled | 056 195 | 056 209 |
| 3/32 in | .094 in | 2.4 mm | 046 797 | 132 961 | V-Knurled | 056 196 | 056 210 |
| .045 in | .045 in | 1.2 mm | 083 319 | 083 489 | U-Cogged | 056 193 | 056 207 |
| .052 in | .052 in | 1.3 mm | 083 320 | 083 490 | U-Cogged | 056 193 | 056 207 |
| 1/16 in | .062 in | 1.6 mm | 046 800 | 053 708 | U-Cogged | 056 195 | 056 209 |
| 5/64 in | .079 in | 2.0 mm | 046 801 | 053 710 | U-Cogged | 056 195 | 056 209 |
| 3/32 in | .094 in | 2.4 mm | 046 802 | 053 709 | U-Cogged | 056 196 | 056 210 |

Ref. S-0025-D

Notes

Notes

Notes

TRUE BLUE®

WARRANTY

Effective January 1, 2006

(Equipment with a serial number preface of "LG" or newer)

This limited warranty supersedes all previous Miller warranties and is exclusive with no other guarantees or warranties expressed or implied.

LIMITED WARRANTY – Subject to the terms and conditions below, Miller Electric Mfg. Co., Appleton, Wisconsin, warrants to its original retail purchaser that new Miller equipment sold after the effective date of this limited warranty is free of defects in material and workmanship at the time it is shipped by Miller. **THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS.**

Within the warranty periods listed below, Miller will repair or replace any warranted parts or components that fail due to such defects in material or workmanship. Miller must be notified in writing within thirty (30) days of such defect or failure, at which time Miller will provide instructions on the warranty claim procedures to be followed.

Miller shall honor warranty claims on warranted equipment listed below in the event of such a failure within the warranty time periods. All warranty time periods start on the date that the equipment was delivered to the original retail purchaser, or one year after the equipment is sent to a North American distributor or eighteen months after the equipment is sent to an International distributor.

1. 5 Years Parts — 3 Years Labor
 - * Original main power rectifiers
2. 3 Years — Parts and Labor
 - * Transformer/Rectifier Power Sources
 - * Plasma Arc Cutting Power Sources
 - * Process Controllers
 - * Semi-Automatic and Automatic Wire Feeders
 - * Inverter Power Sources (Unless Otherwise Stated)
 - * Water Coolant Systems (Integrated)
 - * Intellitig
 - * Engine Driven Welding Generators
 - (NOTE: Engines are warranted separately by the engine manufacturer.)**
3. 1 Year — Parts and Labor Unless Specified
 - * Motor Driven Guns (w/exception of Spoolmate Spoolguns)
 - * Positioners and Controllers
 - * Automatic Motion Devices
 - * RFCS Foot Controls
 - * Induction Heating Power Sources, Coolers, and Electronic Controls/Recorders
 - * Water Coolant Systems (Non-Integrated)
 - * Flowgauge and Flowmeter Regulators (No Labor)
 - * HF Units
 - * Grids
 - * Spot Welders
 - * Load Banks
 - * Arc Stud Power Sources & Arc Stud Guns
 - * Racks
 - * Running Gear/Trailers
 - * Plasma Cutting Torches (except APT & SAF Models)
 - * Field Options
- (NOTE: Field options are covered under True Blue® for the remaining warranty period of the product they are installed in, or for a minimum of one year — whichever is greater.)**
 - * Bernard-Branded Mig Guns (No Labor)
 - * Weldcraft-Branded TIG Torches (No Labor)
 - * Subarc Wire Drive Assemblies
4. 6 Months — Batteries
5. 90 Days — Parts
 - * MIG Guns/TIG Torches and Subarc (SAW) Guns

- * Induction Heating Coils and Blankets, Cables, and Non-Electronic Controls
- * APT & SAF Model Plasma Cutting Torches
- * Remote Controls
- * Accessory (Kits)
- * Replacement Parts (No labor)
- * Spoolmate Spoolguns
- * Canvas Covers

Miller's True Blue® Limited Warranty shall not apply to:

1. **Consumable components; such as contact tips, cutting nozzles, contactors, brushes, slip rings, relays or parts that fail due to normal wear. (Exception: brushes, slip rings, and relays are covered on Bobcat, Trailblazer, and Legend models.)**
2. Items furnished by Miller, but manufactured by others, such as engines or trade accessories. These items are covered by the manufacturer's warranty, if any.
3. Equipment that has been modified by any party other than Miller, or equipment that has been improperly installed, improperly operated or misused based upon industry standards, or equipment which has not had reasonable and necessary maintenance, or equipment which has been used for operation outside of the specifications for the equipment.

MILLER PRODUCTS ARE INTENDED FOR PURCHASE AND USE BY COMMERCIAL/INDUSTRIAL USERS AND PERSONS TRAINED AND EXPERIENCED IN THE USE AND MAINTENANCE OF WELDING EQUIPMENT.

In the event of a warranty claim covered by this warranty, the exclusive remedies shall be, at Miller's option: (1) repair; or (2) replacement; or, where authorized in writing by Miller in appropriate cases, (3) the reasonable cost of repair or replacement at an authorized Miller service station; or (4) payment of or credit for the purchase price (less reasonable depreciation based upon actual use) upon return of the goods at customer's risk and expense. Miller's option of repair or replacement will be F.O.B., Factory at Appleton, Wisconsin, or F.O.B. at a Miller authorized service facility as determined by Miller. Therefore no compensation or reimbursement for transportation costs of any kind will be allowed.

TO THE EXTENT PERMITTED BY LAW, THE REMEDIES PROVIDED HEREIN ARE THE SOLE AND EXCLUSIVE REMEDIES. IN NO EVENT SHALL MILLER BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING LOSS OF PROFIT), WHETHER BASED ON CONTRACT, TORT OR ANY OTHER LEGAL THEORY.

ANY EXPRESS WARRANTY NOT PROVIDED HEREIN AND ANY IMPLIED WARRANTY, GUARANTY OR REPRESENTATION AS TO PERFORMANCE, AND ANY REMEDY FOR BREACH OF CONTRACT TORT OR ANY OTHER LEGAL THEORY WHICH, BUT FOR THIS PROVISION, MIGHT ARISE BY IMPLICATION, OPERATION OF LAW, CUSTOM OF TRADE OR COURSE OF DEALING, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE, WITH RESPECT TO ANY AND ALL EQUIPMENT FURNISHED BY MILLER IS EXCLUDED AND DISCLAIMED BY MILLER.

Some states in the U.S.A. do not allow limitations of how long an implied warranty lasts, or the exclusion of incidental, indirect, special or consequential damages, so the above limitation or exclusion may not apply to you. This warranty provides specific legal rights, and other rights may be available, but may vary from state to state.

In Canada, legislation in some provinces provides for certain additional warranties or remedies other than as stated herein, and to the extent that they may not be waived, the limitations and exclusions set out above may not apply. This Limited Warranty provides specific legal rights, and other rights may be available, but may vary from province to province.

Warranty Questions?

Call
1-800-4-A-MILLER
for your local
Miller distributor.

Your distributor also gives
you ...

Service
You always get the fast,
reliable response you
need. Most replacement
parts can be in your
hands in 24 hours.

Support
Need fast answers to the
tough welding questions?
Contact your distributor.
The expertise of the
distributor and Miller is
there to help you, every
step of the way.





Owner's Record

Please complete and retain with your personal records.

Model Name

Serial/Style Number

Purchase Date

(Date which equipment was delivered to original customer.)

Distributor

Address

City

State

Zip



For Service

Contact a *DISTRIBUTOR* or *SERVICE AGENCY* near you.

Always provide Model Name and Serial/Style Number.

Contact your Distributor for:

Welding Supplies and Consumables

Options and Accessories

Personal Safety Equipment

Service and Repair

Replacement Parts

Training (Schools, Videos, Books)

Technical Manuals (Servicing Information and Parts)

Circuit Diagrams

Welding Process Handbooks

To locate a Distributor or Service Agency visit
www.millerwelds.com or call 1-800-4-A-Miller

Contact the Delivering Carrier to:

File a claim for loss or damage during shipment.

For assistance in filing or settling claims, contact your distributor and/or equipment manufacturer's Transportation Department.

Miller Electric Mfg. Co.

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